Socioeconomic Adversity and Perseverance: A Role for Locus of Control? Impact, Mitigation and Welfare Analysis

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Abstract

The aim of the present doctoral thesis is to study the association between socioeconomic adversity and perseverance and explore the role of locus of control as a mediator of this relationship. The thesis is organised as follows:

Chapter 1 places the motivation of the thesis by underlying the relevant contribution in the literature on the relationship between socioeconomic adversity and behavioural constraints and presents the justification for *locus of control* as the chosen behavioural pathway in this thesis. I then set out the main objective of the thesis, followed by a brief outline of it.

In Chapter 2, I compare the trend of *locus of control* with age amongst marginalized children with that of children from non-marginalized households, using two independent samples. The literature suggests that with age a child tends to become more internally oriented, as one starts feeling more in control of outcomes in life. However, when a child is born to socioeconomic adversity obstacles are more and the probability of success in any endeavour the child pursues is lesser. Under such circumstances of accumulating experiences of unsuccessful encounters with the environment, does *locus of control* trend in the same direction as otherwise suggested in the literature? I attempt to answer this question in this chapter. To test this hypothesis I gather two independent samples of data collected across two different states of India. The data for marginalized sample is collected from a school located in an urban poor locality in Bangalore (Karnataka) and the data for non-marginalized sample is collected from two schools located in a small town middle-class locality in Hooghly (West Bengal). Data is gathered on five questions assessing their locus of control, household demographics and parental education for controls. In the marginalized sample there are 236 respondents and in the non-marginalized sample there are 184 respondents. After controlling for covariates that shape locus, the results show contrasting developmental path of *locus of control* with age between the two groups. Therefore, the result concede with the proposed hypothesis.

In Chapter 3, I present results from a randomized controlled trial conducted in India in collaboration with an NGO. Through this trial, I attempt to study the impact of being exposed to socioeconomic adversity on one's *locus of control* and *perseverance*. Then I use life-skill training as an intervention to treat locus and observe whether it is able to alleviate the effect of adversity on perseverance. The main theme that this chapter explores - given socioeconomic adversity may reverse the trend of locus of control amongst marginalized children as observed in Chapter 2, is there any possible impact on perseverance too as locus has been proposed as an ultimate motivator for effort? Can the impact on perseverance be mitigated by intervening locus of control? I test this hypothesis with a dataset of 237 students studying in the same school and coming from urban poor households in the city of Bangalore in India. Results strongly support the main thesis.

In Chapter 4, I estimate the compensating variation of intervening locus of control amongst communities that are surviving socioeconomic adversity in a developing country like India. In Chapter 3, the results suggest that locus of control becomes less malleable with age. However, positive impact can be made if intervened early. Given, locus is intervened through life-skill training amongst children growing up under adversity, how much well off would they be as adults if they grow up as *internal* versus *external* individuals? To analyse the same I collect locus of control data on one parent of each child who participate in my trial presented in Chapter 3. In the household survey conducted with the parent, the parent is required to answer the Leyden Welfare question that I then use as my measure of welfare for calculating the compensating variation of treating locus of control amongst the disadvantaged.

Finally, in Chapter 5, I summarise the main findings of the thesis, and emphasise the key weaknesses of the study as well as potential avenues for future research.

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Acknowledgements

In the middle of my uprising career in the financial industry, I realised that my calling was in research and especially in an area that I could connect to. However, I did not know the path for it. While embarking on this journey I was sceptical. Leaving a stable career and returning to academics was not the easiest decision to make. Nevertheless, in my second semester of Master's Degree, I was introduced to Behavioural Economics and I instantly found connection with it. Since then there has been no looking back. Here I am at the end of this amazing journey! However, this journey would not have been possible without few people whom I need to express my gratitude to.

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I am glad that this journey is about to end. This is a dream come true!

Declaration

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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Chapter 1

Introduction

1.1. Motivation and Main Objective of the Thesis

"People who believe they have the power to exercise some measure of control over their lives are healthier, more effective and more successful than those who lack faith in their ability to effect changes in their lives."

– Albert Bandura

The 10.9% [2013] global poverty headcount ratio against 35.5% [1990] (The World Bank, 2014) might be optimistic, but only until one ignores the large number of people still living near the poverty line in developing countries. Despite being above the poverty line, these people still thrive under substandard living conditions defined by lack of basic services, inadequate dwellings, overcrowding, unhealthy living conditions, social exclusion, and are most likely to pass on this life of hardship to the next generation. Understanding of why these people are not able to break out of the impoverished trap rightly allows us to see not only just where we want to head in the future but also how we want to move forward. Until recently, scholars interested in this field of study have only examined poverty traps from the perspective of external constraints[1]. However, the latest advancements in the literature represent an alternative school of thought that move away from the rational neoclassical ideas of utility maximization, equilibrium and efficiency and suggest that behavioural biases may act as independent source of disadvantage for escaping poverty. Human beings are susceptible to behavioural biases as beliefs develop through the process of introspection, and that can be quite inaccurate or often influenced by the experience one goes through. Though behavioural biases are common irrespective of rich and poor, the poor face a higher downside risk due to the deprivation they constantly experience, which may lead to the manifestation of biases more forcibly. The novelty of behavioural biases is

[1] External constraints are the challenges of poverty that an individual has little control over. Some of the most common external constraints are malnutrition (Dasgupta & Ray, 1986), credit and insurance market imperfections (Loury, 1981; Banerjee & Newman, 1991; 1993), poor access to information about education (Nguyen, 2008; Jensen, 2010) and health (Dupas, 2011), institutional or governmental failures (Bardhan, 1997).

not new but its application in the poverty trap literature is relatively niche. A poor man not only identifies with longstanding deprivation but also embodies the "culture of poverty"[2]. He also encounters obstacles and setbacks to his goal-oriented endeavours almost throughout his entire life. Therefore, the poor stays vulnerable to the reinforcement of life's negative feedback process into their beliefs, leading to formation of behavioural biases. When these biases become endogenous to the experience of socioeconomic adversity, they begin to act as internal constraints and limit the decision-making process. As Duflo (2003) states, "what is needed is a theory of how poverty influences decision making, not only by affecting the constraints, but by changing the decision-making process itself'. An individual is defined by the choices he makes from all the alternative options available (Heifetz & Minelli, 2006). These decisions could be tangible decisions like education, health, goods and services, investment, or non-tangible choices like simply the willingness to choose a good life for oneself (Appadurai, 2004). However, behavioural biases may restraint one's ability to understand perfectly well all the trade-offs involved while making a decision or cut down one's hope for a better future. Under such mind-set one may not *persevere* to look out for the best alternative. Rightly, the World Development Report (2015) elaborates on the necessity of considering behavioural biases in the policy making process, "failure to address the psychological determinants of human behaviour is often the weakest link in social policy initiatives. Simply providing ready access to resources does not mean that people will take advantage of them" (Bandura, 2009, p.505).

Perseverance is the attitude to give persistent effort despite obstacles or failure. The choice to persevere is of significant economic interest because achievement can be ascribed to the exhaustive set of luck, innate ability and perseverance, with perseverance taking precedence over the rest as one has only little control over luck and innate ability[3]. The attitude of perseverance is integral to 'grit' that is defined as perseverance and passion for long term goals has been found to account for an average of 4% of the variance in success outcomes that includes educational attainment and labour market outcomes (Duckworth, Peterson, Matthews, & Kelly, 2007). It has also been disputed by Howe (2001) in his book explaining the assumption that high achievement derives directly from exceptional mental ability: "Perseverance is at least as crucial as intelligence. . . . The most crucial inherent differences may be ones of temperament rather than of intellect as such" (p. 15). However,

[2] Anthropologist Oscar Lewis argued in his prominent ethnography work "culture of poverty" that the lives of the poor are characterized by "a strong feeling of marginality, of helplessness, of dependency, of not belonging . . . of inferiority, of personal unworthiness." (Lewis, 1969)

[3] Some researchers believe ability could be accumulated over time with persistent effort or grit

in the economics literature there is no mention about the optimal level of perseverance. How much perseverance is good perseverance? This is a gap that remains to be addressed. The thesis is based on the assumption that more perseverance is good, especially in case of the marginalized. Researchers have observed counterproductive attitudes amongst the marginalized represented by lack of progressive and economic life choices[4]. The drawback of such self-fulfilling pessimistic choices[5] is the fact that these choices can translate into persistent large differences in income over generations. If the individual does not regret ex-post making the choice, the consequential choices adjust accordingly, the individual recommends the same to the next generation and eventually such self-fulfilling pessimistic choices become the social norm of the poor. At minimum, to make utility maximizing choices one needs sufficient information, for that one needs to be willing to choose the best alternatives. That willingness to make choices on a day-to-day basis can relate to one's persevering attitude. The significance of perseverance magnifies in context of the marginalized since the stringent external constraints constantly challenge the odds of their success in life. The margin of error is sizeably narrow in case of the poor and any lack of proactive effort would only manifest in more pronounced ways by perpetuating poverty trap. Therefore, this thesis builds on the assumption that perseverance is good for the marginalized population as through ingenuity and perseverance one would often figure out ways to control situations even when opportunities are limited and constraints are abundant and strive longer at the face of adversity (Bandura, 1990).

However, the choice of perseverance is influenced by one's perception (Bandura, 1991). Hence, the complex phenomenon of the marginalized making self-fulfilling self-defeating choices for themselves can be understood better if we are able to interpret why beliefs are biased under poverty, why those biases hurt more than usual and spot the biases in isolation. The poor have often been perceived as incompetent (Fiske, 2011; Kerbo, 1976)

[4] For example, failure to enrol in assistance programs when they are eligible (Bertrand, Mullainathan, & Shafir, 2004; Moffitt R. , 1983; Currie, Grogger, Burtless, & Schoeni, 2001), reluctance to open bank accounts (Bertrand, Mullainathan, & Shafir, 2004), reluctance to adopt cheap, preventive health measures (Katz & Hofer, 1994; Miguel & Kremer, 2003), or low-cost technology (Banerjee, Duflo, Chattopadhyay, & Shapiro, 2011), or fertilizers by farmers despite known higher returns (Duflo, Kremer, & Robinson, 2004), reluctance to send boys to English medium education in spite of being aware of the higher returns (Munshi & Rosenzweig, 2006). This only hint towards the fact that the basic assumption of economic theory "more is better than less" might not apply to individuals from the impoverished population (Moffitt R. , 1983).

[5] See Steele (1992) for self-fulfilling pessimism about the returns to effort for academic pursuits

and unmotivated (Reutter, et al., 2009). Tirado (2014) gives a first-person account of how the indignities that come with poverty take away the motivation to strive: “Poverty is bleak and cuts off your long-term brain...We don’t plan long term because if we do, we’ll just get our hearts broken. It’s best not to hope”. However, the reasons for this lack of motivation could be many and all the channels are yet to be discovered, discussed and debated.

One of the behavioural attributes that has been broadly discussed in context of poverty trap so far in the literature is *aspirations* (rather lack of it) (Genicot & Ray, 2017; Dalton, Ghosal, & Mani, 2016). Aspirations are goals that one desires to attain, hence that motivates one to invest effort (Locke & Latham, 2002). In rural Ethiopia, consistent high correlation has been found between fatalistic beliefs and self-defeating behaviours like lack of credit demand (Dercon, Bernard, & Taffesse, 2011). Earlier, similar fatalistic beliefs came through in statements reported by Rahmeto and Kidanu (1999) from their interviews with disadvantaged Ethiopians - ‘We live only for today’, ‘It is a life of no thought for tomorrow’, ‘Waiting to die while seated’ and ‘We have neither a dream nor an imagination’. All of these evidences indicate lack of aspirations amongst the people surviving socioeconomic adversity, which then explains the non-existence of proactive effort on part of the disadvantaged. The renowned anthropologist Appadurai (2004) suggested that one's capacity to dream about the future (or, aspire) is derived from one's current identity, identity in turn is shaped by one's culture. The cultural identity of the poor is filled with exclusion, deprivation, struggles and failures, which might not allow them to foresee a future very far from what they have experienced so far, leaving them short of '(aspirational) resources' to alter status quo. Empirical evidences suggest that interventions aiming to improve aspirations, have been effective in improving future oriented behaviours like savings behaviour and investments in children’s schooling (Bernard, Dercon, Orkin, & Taffesse, 2014; Glewwe, Ross, & Wydick, 2013) highlighting the malleability of aspirations with carefully designed interventions.

Another behavioural attribute that has been discussed often is self-image. The relationship between self-image and motivation has been acknowledged in theoretical economics early on (Bénabou & Tirole, 2002; Köszegi, 2006). Self-knowledge is rarely perfect as life experience, interaction with family and community, collective beliefs, social norms form one's self-image (Nisbett & Wilson, 1977; Bisin & Verdier, 2001). The experience of socioeconomic adversity has always been associated with stigma, exclusion and marginalization that could lead to a low self-image by all possibility. In Theory of Moral Sentiments Adam Smith mentions, "the poor man … is ashamed of his poverty...’ (2010,

pp 62). Not very long ago, Abhijit V. Banerjee and Esther Duflo in their book Poor Economics describe how they came across statement like "Children from homes like ours. . . ." (Duflo & Banerjee, 2011, p.91) from parents of a child in the regions of Indian Himalayas who denied to participate in an activity that was being conducted amongst poor schoolchildren. The statement clearly suggested that the parent hinted at the fact that not much should be expected from a child who comes from a deprived background. This brings forward the low self-image one holds when thriving under socioeconomic adversity. This low self-image possibly forms amongst the underprivileged once one has internalized society's low expectations from them, and it is a matter of time that one starts perceiving the social signals to be legitimate (Loury, 1999). This might then curb one's appetite to make any proactive effort for altering status quo[6]. However, interventions that treat self-image have also been found effective in improving future-oriented choices (Ghosal, et al., 2013). Therefore, one could be nudged into better behaviour if we have clear insights of one's behavioural biases. The main objective of the present doctoral thesis is to discuss the relationship between the experience of socioeconomic adversity and the attitude to *persevere* and explore the role of *locus of control* in the same context.

Locus of control is one's generalized expectancy regarding the efficacy of effort in determining outcomes as opposed to chance or other externalities like powerful others. It has the potency to influence a myriad of outcomes by regulating the amount of effort one expends at an endeavour. To explain locus in extreme terms, there are two types of individuals, one who believes that reinforcements are a result of effort and the other who believes whatsoever outcomes are always driven by external factors beyond one's control like destiny or powerful others. The former group would inevitably try harder at the face of failures and attribute failure to the lack of their own effort too. There is evidence to support this hypothesis that an individual who believes that reinforcements are contingent upon his own effort would definitely invest higher amount of effort than someone who believes that reinforcements are driven by factors like luck, destiny or powerful others, which are out of one's control (Rotter, Liverant, & Crowne, 1961; Lifshitz, 1973; Lefcourt, 1966). Rotter (1966) placed this difference in belief regarding the causality between one's own actions and consequences within the larger framework of social learning theory and named this

[6] Performance of a discriminated group is affected upon internalization of society's low expectations (Hoff & Pandey, 2006), student achievement is hindered when they internalize sense of helplessness and begin to undermine their own effort (Bransford & Vye, 1989; Dweck, 1986), performance of students from lower socioeconomic strata is affected when they internalize low social signals (Croizet & Claire, 1998).

attitude as “internal-external locus of control”, where he categorized the former type of individual as internal and the latter as external. Psychologists for long have argued that an individual’s belief that his own actions would lead to the desired outcome is fundamental to one’s motivation or the effort one invests (Bandura, 1986; Skinner, 1996; Goldsmith, Veum, & Darity, 2000; Bandura, 1989). Therefore, from the perspective of behavioural poverty trap it becomes imperative to understand the role of locus of control as a mediator between the experience of *socioeconomic adversity* and *perseverance*.

Though locus of control is a psychological attribute, its implications in terms of economic outcomes is far-reaching. Locus has been widely used to explain academic outcomes like performance, school completion, pursuing higher education and labour market outcomes like human capital investment, career decisions, vocational education choices, earning, achievement, job search patterns and even factors like period of unemployment after job loss. In the field of education, there is sufficient literature that documents the relationship between locus of control and academic achievement, where an internal locus of control has been consistently associated with higher academic performance and external locus of control with poor academic performance. In fact, the “Coleman Report” (Coleman J. S., 1966) suggested that locus of control is more highly related to school achievement than any other factor in the students’ background or school. Internal locus of control has been correlated with staying in high school (Ekstrom, 1986) and advanced career decision-making (Trusty & Lampe, 1997; Mau, Domnick, & Ellsworth, 1995). Empirical evidence suggests that first, second and third grade boys with higher perception of control have been found to invest significantly more time in intellectual activities and also performed the same with higher intensity and researchers attributed this performance purely to the motivational factor (Crandall, Katkovsky, & Preston, 1962). Therefore, the pathway that connects locus with positive educational outcomes is possibly *perseverance*. There is also compelling evidence that locus of control relates to an array of labour market outcomes too. For example, internal locus of control has been related to higher achievement (Andrisani, 1977; Nowicki & Schneewind, 1982; Cobb-Clark & Tan, 2011), higher earnings (Dunifon & Duncan, 1998; Andrisani, 1977; 1981; Goldsmith, Veum, & Darity, 2000; Feinstein, 2000; Heineck & Anger, 2010; Piatek & Pinger, 2010), job satisfaction (Ng, Sorensen, & Eby, 2006), better performance (Judge & Bono, 2001), better ability in capitalizing on the advantage of having a good education or an advantaged family background (Judge & Hurst, 2007), setting challenging goals (Ng, Sorensen, & Eby, 2006), seeking of more complex jobs (Judge, Bono, & Locke, 2000), pace of occupational advancement (Andrisani, 1977)

and even higher probability of reemployment and shorter unemployment following job loss (Gallo, Endrass, Bradley, Hell, & Kasl, 2003). Locus of control has also been correlated to socially desirable behavioural variables like taking responsibility for one's own actions, being more independent, and exhibiting greater self-control (Lefcourt, 1976), the ability to defer short-term rewards for long-term goals (Miller, 1978; Strickland, 1973), health behaviours (Lumpkin, 1986). Much of these relationships are indirectly linked with the intricate relationship between locus of control and human capital investment decisions (Coleman & DeLeire, 2003; Piatek & Pinger, 2010; Heckman, Stixrud, & Urzua, 2006). Locus of control is crucial to the literature of behavioural poverty trap because when one has internal sense of control, given the stringent externalities of poverty, one with internal locus of control would try harder even at the face of most difficult challenges. Not surprisingly, locus has been found to have significant independent effect on social mobility (Stumm, Gale, Batty, & Deary, 2009). However, the complex mechanism of this relationship is yet to be explored in the economic literature.

Reinforcement of the perception of control is associated with successful interactions with the environment that leads to further motivation. When one is confronted with socioeconomic adversities, the probability of such successful interaction minimizes and hence the probability that one's locus of control would be *external* maximizes. In such a context, when locus is *external* and the marginal returns to effort is minimal, perseverance despite imminent failure is unlikely to happen, prohibiting in achievement striving (Weiner, 1991). One is more likely to surrender quickly at the face of difficulty. On the other hand, if sense of control is *internal,* one would put effort to take charge of their own lives even at the face of adversity, in effect probably increase effort after failure (Dweck, 1986; Bransford & Vye, 1989). Socioeconomic adversity may affect one's *locus of control* analogous to an experience of crisis. Negative influences overwhelms an individual due to which one may feel relatively powerless to influence life outcomes (Smith, 1970). Socioeconomic adversity may lead to repeated failures just like how a child growing up with physical adversity does. Therefore, if encountering repeated failures due to physical adversity leads to the child developing external sense of control[7], so may happen when a child is growing up under the influence of socioeconomic adversity. Therefore, it is worthwhile to look at socioeconomic adversity and the biases it may cause to locus of control and the further impact on perseverance, to inform better pro-poor policy making.

[7] See (Henderson, May, & Umney, 1989)

1.2. Outline of the Thesis

The present doctoral thesis studies the impact of being exposed to socioeconomic adversity on the attitude to persevere and the role of locus of control in the same context. The thesis is based on data gathered in India, therefore set in the context of typical socioeconomic dynamics of a developing country. In Chapter 2, I will compare the growth trend of locus of control with age amongst marginalized children versus children from non-marginalized households in India. In Chapter 3, I explore the role of locus of control as the variable mediating the relationship between experience of socioeconomic adversity and perseverance. In Chapter 4, I will calculate the compensating variation of being an externally oriented individual when one is already disadvantaged. Finally, Chapter 5 concludes outlining weaknesses and potential areas for future research.

As a child grows up, with age one gains a sense of control over outcomes in life with accumulating experiences of successful encounters, therefore one tends to be internally oriented with age. However, the studies that have explored this growth trend of locus of control with age have mostly used data of developed economies and from non-marginalized background. It is critical to compare and conclude whether given the challenges of socioeconomic adversity, the locus of children from marginalized households conform to this predicted trend too. In Chapter 2 I use two independent samples of data to compare the trend of locus with age between marginalized and non-marginalized children. The first sample constitutes marginalized children from urban poor location in Bangalore (India) and the dataset is constructed using 236 children aged between 9-17. The second sample constitutes non-marginalized children from a typical middle-class town in West Bengal (India) and the dataset is constructed using 184 children aged between 9-18. To measure locus of control, I construct a novel index with questions put together from established locus of control scales. The developmental narrative essentially makes the case for the used questionnaire to measure locus of control. Specifically, it is argued that locus has a positive developmental relationship with age irrespective of the economic developmental context, however when one is born to socioeconomic adversity such might not be the case.

Taking forward the result from Chapter 2 that marginalized children exhibit a growth trend in locus of control that do not conform to the trend amongst non-marginalized children, in Chapter 3 I further analyse the impact of being exposed to socioeconomic adversity on

one's perseverance and show how locus of control moderates the same. I do this using a randomized controlled trial set in an urban poor location in Bangalore (India) with children from marginalized households. This study is done in collaboration with the NGO *(NGO Name removed for confidentiality)* who conduct life-skill training in the partner school where the study is conducted. The novelty of this study is the method of priming that I use to create variation between two groups of children in terms of being exposed to socioeconomically adverse stimuli, however, this method comes with its own methodological challenges. While priming has been used earlier in economics, there is no formal studies that test the impact of being exposed to socioeconomic adversity on *perseverance* and capture the mechanism. I further test the potency of two different types of life-skill interventions that aim to treat locus of control. I design the remedial interventions using the structure of the NGO's life-skill training program with minor alterations to suit the need of the trial. The dataset is constructed of 236 students aged between 9-17 belonging to the same school, located in a relatively deprived area within the city of Bangalore. This chapter shows that when one is exposed to adversity priming, one's perseverance in an effort-chance task reduces significantly and one's self-reported locus is significantly more external. Role-model effect and life-skill training combined together that aims to challenge excess belief in externalities proves to be a useful tool in altering locus and mitigating the impact of adversity priming by alleviating their level of perseverance in the effort-chance task. However, results suggest that an early start of such an intervention could be beneficial, as belief gets more resolute with age.

In Chapter 4, I calculate the compensating variation of intervening locus of control amongst the marginalized using the Leyden Welfare approach. The underlying theory is that the welfare of an internally oriented individual would vary from an externally oriented individual even though both have lived all life with socioeconomic adversity. If under the pretext of socioeconomic adversity one is externally oriented one would feel a sense of impairment which in turn would affect one's utility. The Leyden Welfare approach comprises of the welfare question that is asked to the mother of the participating child in Chapter 3. The responses to the Leyden Welfare question is used to construct an utility index. The individual level survey data is then used to calculate the compensating variation of external versus internal locus of control.

In summary, the results from this thesis firstly suggests that the positive relationship between locus of control suggested earlier in the literature holds true even in case of

children from developing country like India, however, not when one is born to adverse socioeconomic conditions. Locus of control tends to be more external as a child is growing up in a marginalized household. Secondly, the results highlight the significant negative impact of being exposed to socioeconomically adverse stimuli on perseverance. Thirdly, it reveals the potency of role-model and life-skill training as an effective tool for mitigating the adverse impact of marginalization on perseverance. Finally, since the remedial interventions have heterogeneous effect by age, this thesis propagates the importance of an early start if any significant long-term impact needs to be achieved in terms of perseverance amongst marginalized children.

The contribution of this thesis is significant in terms of the attempt it has made to study locus of control amongst children in India that has not been done earlier. It is also novel in terms of comparing the locus of control between marginalized and non-marginalized children that gives perspective in the way further research could be designed being aware that there might exist a significant difference in between the marginalized versus non-marginalized children with respect to their general ideology of control. The design of the 5-item locus of control scale based on I-E scale (Rotter, 1966) to suit the context. The main contribution of this thesis is in offering empirical evidence on how primed driven socioeconomic adversity may affect perseverance. We have seen earlier that grit can be fostered in a classroom setting by altering beliefs (Alan, Boneva, & Ertac, 2016). However, this thesis goes a further step in using priming as a tool to show the causal impact of socioeconomically adverse stimuli on perseverance that takes forward the poverty trap literature related to internal constraints a step ahead (Genicot & Ray, 2017; Dalton, Ghosal, & Mani, 2016; Ghosal, Jana, Mani, Mitra , & Roy, 2016). This thesis also recognizes the gap in literature present in terms of optimal level of perseverance or locus of control in theoretical or empirical economics or even in other disciplines, such as psychology. This offers a new research question that can potentially be a promising avenue for future research.

Chapter 2

Locus of Control with Age: Does marginalization reverse the Growth Trend? Evidence from India

Abstract

The developmental relationship of locus of control with age amongst children is studied in this chapter using two independent samples, one that represents children from marginalized background and one that represents children from non-marginalized background. The datasets for both samples are constructed using data collected in India. The non-marginalized dataset consists cross-sectional data on 184 children from middle-class households in West Bengal (India) and the marginalized sample consists of a cross-sectional dataset on 236 children from an urban poor location in Bangalore (India). The results of the non-marginalized sample suggests that with age a child tends to be internally oriented, however this effect is not linear and reduces with age. The results of the marginalized sample does not conform to the same. There is a reversal in developmental trend observed. Results show that with age one tends to be externally oriented when born to socioeconomic adversity and this belief strengthens with age. The contradictory results of the two groups leave us with the question to be explored further – does being exposed to adverse socioeconomic stimuli impact locus significantly?

2.1. Introduction

Social learning theorists define locus of control as the perceived causality between action and reinforcements. Rotter (1966) introduced the term "internal-external locus of control", where he defined *internal* as who believes in the contingency between effort and outcomes and *external* as one who believes outcomes are determined by external forces like chance or powerful others. A number of studies have confirmed significant positive relationship

between locus of control and various human capital investment outcomes in the academics and labour market, which ultimately at the core highlights the relationship between locus and one's intrinsic motivation to expend effort with the intention of altering the status quo. Economists have also recognized this relationship now and there exists a model in labour economics that explains the causality between locus of control and human capital investment (Coleman & DeLeire, 2003). Rotter (1966) viewed locus of control as a stable characteristic of personality as he dealt mainly with adults. On the contrary, like any other personality trait, locus too has antecedents that heavily influence its developmental path. Age is one of the predominant factors associated with changes in causality perception, specifically in the direction of increasing sense of internal control (Lefcourt, 1976). However, socioeconomic environment is also named as one of the prominent influencers (Lifshitz, 1973; Sherman L. W., 1984; Landau, 1995; Flouri , 2006). Therefore, one can wonder that when socioeconomic conditions are adverse whether locus of control would still emulate similar developmental trend amongst children, or the hardships and failures of life might reverse the trend to be more externally oriented. This understanding of the developmental trend of locus with age amongst marginalized children versus other children is crucial for determining the role of locus in poverty traps. This chapter attempts to compare this trend by comparing data of two independent samples of children, the first dataset is constructed using a pool of 236 marginalized students aged between 9-17 from Bangalore (India) and the second dataset is constructed using 184 non-marginalized children aged between 9-18 from West Bengal (India).

Most studies have suggested that children as they grow, their perception of control tend to orient internally. Some of the notable studies are that of Crandall, Katkovsky, & Crandall (1965) who conducted a study with 923 students between grade 3-12 coming from schools across USA, Sherman (1984) who conducted a longitudinal and cross-sectional study with 97 children over a period of 3 years from Midwestern University School of Education, Chubb, Fertman, & Ross (1997) conducted a longitudinal study with 174 students from middle-class suburban community in USA and followed them for four years from 9^{th} grade. All of the aforementioned studies suggested that with age locus of control align internally amongst children and some of the results remained consistent after adjusting for socioeconomic class too. Studies that have been conducted so far, the number of studies suggesting growing internal sense of control amongst children safely outnumber the ones that do not conform to this result (Weisz & Stipek, 1982). This prediction is primarily based on the notion that as children grow older they increase their actual competence in

manipulating and adapting to the environment (Bialer, 1961; Crandall, Katkovsky, & Crandall, 1965). However, most of the notable studies that throw light on this relationship between locus of control and age have been conducted with samples constructed out of non-marginalized households. Though sometimes adjusted for socioeconomic class, the indisputable difference in context between a marginalized household and a non-marginalized household leaves one contemplating whether the developmental pathway of locus would remain same when a child is growing up under conditions of socioeconomic adversity. There is no empirical evidence that focuses on the same. Therefore, verifying the predicted developmental relation between age and locus of control in context of marginalized versus non-marginalized children from a developing socioeconomic milieu does appear worthy and a significant research goal.

The reinforcement of internal control is associated with successful interactions with the environment. The gain in internal control with age observed by earlier studies might be a result of cumulative experience of 'successes'[8]. In the early stages of development, a child does not bear any conception of the relationship between one's own behaviour and outcomes. Consequently, they tend to view all life experiences in life as being externally controlled. With age, the child begins to note the instances when he is able to influence the outcome by his actions and reach satisfactory conclusion, and therefore begins them as internally controlled. On the contrary, if the child's goal-directed behaviour is blocked or frustrated too often and encountered with unpleasant outcomes, he might begin to categorize goal-oriented experiences as externally controlled. When a child is born to socioeconomic adversity the child encounters marginalization, discrimination and exclusion. They might often be exposed to beliefs and ideas that might not be at the best interest of aligning locus internally. Their daily life often block the gratification of a goal-oriented behaviour that may also lead to loss of belief in the efficacy of effort. Therefore, it will be worthwhile in this study to explore the relationship between locus of control and age and compare the developmental trend between two groups of children, one coming from marginalized background and the other from non-marginalized background, both set in the context of the developing socioeconomic culture of India. The results will help us draw attention to the impact of socioeconomic adversity on the growth trend of a significant behavioural attribute, locus of control that has serious economic consequences in adult life.

[8] Goal achievement is being referred to as success and frustration or non-achievement of a goal as failure

This study is critical because it aims to understand whether locus of control, a non-cognitive factor that plays crucial role in adult life achievements, shapes differently amongst marginalized children versus non-marginalized children in the context of a developing country like India. The existing knowledge tells us that locus of control tends to be internally oriented as a child grows up, gains more control over environment and is able to manipulate outcomes. However, this has not been validated in case of Indian children aged between 9-18 particularly, though it has been validated for adults (Khanna & Khanna, 1979; Carment, 1974; Parsons & Schneider, 1974). Secondly, daily socioeconomic struggles being an integral part of a child's life growing up in a marginalized Indian household may influence the way the child develops control ideology. Therefore, this study bridges this gap by informing us firstly on the developmental relationship between locus of control and age in case of a typical sample of Indian children between 9-18 and also informs us about how this result differs from a typical group of marginalized Indian children. This study is novel in its attempt in comparing the developmental path of locus of control with age between marginalized versus non-marginalized children stemming from the hypothesis that socioeconomic obstacles may shape one's belief about the control ideology.

The rest of the chapter is organized as follows. Section 2.2 gives a brief literature review on the antecedents of locus, Section 2.3 explains the data, outcome variable construction, methodology, Section 2.4 presents the results, and finally 2.5 concludes.

2.2. Antecedents of Locus of Control: Literature Review

2.2.1.Age

Rotter (1966) viewed locus of control as a stable characteristic of personality as he dealt mainly with adults. However, he did suggest that an infant develops locus of control as he or she gathers more experience. Probably this led many researchers to suggest relationship between locus and age thereafter. Locus may vary with age because with age one gathers experience that is associated with changes in causality perception. As children grow older into adolescence and adulthood, their ability to differentiate between the controllable and uncontrollable also develop because their perception of the reality evolves with awareness (Lewin, 1951). Mostly studies have predicted the shift of locus with age more specifically

towards internal[9], probably because the competence of controlling the environment and actualizing outcomes increases with age (Bialer, 1961; Crandall, Katkovsky, & Crandall, 1965). To broadly categorize the development of locus over different stages of life, an increasing sense of control has been observed from youth to adulthood (15 to 30-39 yr.), that remains stabilized through middle age (30 to 59 yr.) and drops in old age (60 yr. and older) (Lao, 1974). However, there have been many empirical arguments suggested in the literature regarding the mechanism in which locus forms itself from the stage of infancy to being a young adult. The most prominent hypothesis is that locus of control begins to stabilize in a child at the age of 8 to 9 or possible even earlier, and does not change significantly between 8 to 9 and 15 (Crandall, Katkovsky, & Crandall, 1965). Particularly, some studies have found significant grade effect of how locus shifts amongst children as they grow into young adults moving from primary to middle to high school (Chubb, Fertman, & Ross, 1997). Nevertheless, the studies that propose growing internal locus of control with age are predominant.

2.2.2. Gender

The influence of gender on locus of control is most likely due to the biological and social life differences between the two primary genders. However, there are varied views on the same. Some studies have found gender differences in locus of control (Crandall, Katkovsky, & Crandall, 1965; Nunn, 1994; Cairns, Duffy, McWhirter, & Barry, 1990), whereas others did not (Adame, Thomas, & Steven, 1989; Dellas & Louise, 1987; Sherman L. W., 1984). The studies that found gender differences in locus largely reported higher internal sense of control amongst males over females. The gender differences in locus of control may be owing to the different puberty ages, coping mechanisms in adolescence or even the feelings of empowerment that come along with puberty amongst males (Chubb, Fertman, & Ross, 1997). Essentially, there remains lack of clarity and a split view on how gender plays a role in shaping locus of control in early years of life.

[9] See (Lefcourt, 1976; Lao, 1974; Crandall, Katkovsky, & Crandall, 1965; Sherman L. W., 1984; Stipek, 1980)

2.2.3.Parental and Family Attributes

Ecological variables like parental involvement, parental control, family environment and family structure play a role in the development of locus of control (Flouri, 2006; Skinner, Zimmer-Gembeck, Connell, Eccles, & Wellborn, 1998; Lifshitz, 1973; Gonzalez-DeHass, Willems, & Holbein, 2005). Parental involvement includes factors like the frequency with which parents discuss school, job, or troubling issues with children and this may influence the development of locus along with their parenting style. Parents who tend to exercise strong control over the child may lead to the child attributing outcomes to external forces, whereas, sufficient control may help the child develop an internal sense of control (Maccoby & Martin, 1983; Darling & Steinberg, 1993). Overall, parenting styles that promote autonomy may lead to internal locus of control amongst children (Ross & Broh, 2000; Zea, Lisbeth, & Bianchi, 1995). However, in both cases of parental involvement (Grolnick, Ryan, & Deci, 1991; Merchant, Paulson, & Rothlisberg, 2001; Marjoribanks, 1994) and parental control (Trusty & Lampe, 1997), the perceptions of the child than actual practises might have a stronger influence. In fact, when children perceive parental control with parental involvement it can lead to locus being oriented internally and perception of control without involvement can lead to external orientation, with parental involvement having a significant stand-alone effect on locus of control of the adolescents (Trusty & Lampe, 1997). Therefore, parental involvement and parental control have a significant role in shaping locus of the child.

It would be a partial view if the effect of the parental attributes on a child's locus is studied in isolation and the environmental climate of the family is not taken into account. For example, family size makes a difference because in smaller families the child has a larger probability of being recognized as an individual, being held accountable for own actions or even in terms of receiving attention. Whereas, in larger families the child might have lesser contribution in any kind of family outcomes, which may significantly shape the way a child develops locus of control (Crandall, Katkovsky, & Crandall, 1965). It is also believed that a sense of belonging to the family is supposed to help the child develop an internal locus of control (Chubb & Fertman, 1992).

2.2.4.Socioeconomic conditions

The social environment influences one's personality and given the fact that locus of control is an attribute of personality that develops with experience, it is very likely that one's social environment may shape one's locus. The elements of social environment that are large and consistent over time like socio-economic status are more likely to affect locus rather than the one-time short-term events like a natural disaster. Socioeconomic status is a significant determinant of locus of control (Flouri, 2006; Sherman L. W., 1984; Battle & Rotter, 1963; Landau, 1995; Beauvois & Dubois, 1988). Indeed, external sense of control might be a reflection of lack of real resources and opportunities with which to manipulate their environments since there seems to be an association between income, education, occupational status and internal locus of control (Mirowsky & Ross, 1990). The development of the behaviour-reinforcement contingency is more likely to depend on how the child perceives the world he lives in while growing up (Nowicki & Strickland, 1973). Therefore, experiencing a stressful and disruptive life when young may lead to an external locus of control (Coleman & DeLeire, 2003). In addition, lower socioeconomic status is associated with adversities beyond just resource constraint. One of the most prominent adverse phenomenon that comes along with lower socioeconomic status is "alienation" or social exclusion that leads to a sense of powerlessness amongst the lower socioeconomic strata (Seeman, 1959). This sense of powerlessness arises from the inability to achieve one's ends due to lack of resources or opportunities and may lead to external locus of control due to the belief one develops in such a context that one cannot determine the outcome one desires through one's actions. Therefore, the experience of adversities associated with one's socioeconomic status may be significant if not sufficient in shaping locus of control.

2.3. Data, Outcome Variable and Methodology

2.3.1.Setting and Sample

This study is conducted using two datasets. The first dataset, hereafter referred to as Sample 1 represents the non-marginalized, is constructed pooling data from two schools

located in the small town of Bandel[10] in West Bengal (India). Bandel is a small town that upholds all the typical characteristics of a suburban small town in India, growing in vicinity of the larger city of Kolkata. The settlements here are mostly middle-class or lower-middle class, with a larger portion attributed to the rural sector. It serves as a 'market town', providing trade and other services to the growing rural market. Bandel like a typical census town has growing connectivity with bigger cities in its vicinity, therefore providing small-scale and non-tradable services, which is also the main source of non-farm employment in this town. The first school called *(School name removed for confidentiality)* uses English as the primary teaching language. It is a state board school that attracts mostly the middle and upper-middle class household students. The second school *(School name removed for confidentiality)* is located within 5 miles of *(School name removed for confidentiality)* but attracts mostly students from lower middle-class. The second dataset, hereafter referred to as Sample 2 represents the marginalized, is constructed based on data collected from *(School name removed for confidentiality)* in Bangalore. The school is located in an urban poor location and mostly attracts children from marginalized households. I collaborated with an NGO that conducts after school life-skill training in the school, to carry out a randomized controlled trial presented in Chapter 3. Therefore, for the purpose of baseline analysis I collected data on the household and family characteristics and baseline locus of control of the children that is used to construct the dataset for Sample 2 in this chapter. Table 2.1 summarizes the household characteristics by school. As observed, the Sample 1 overall has a higher percentage of students belonging to households practising Hindu religion than Sample 2. The two samples vary largely across mother's education where almost 16% of mothers amongst the marginalized (Sample 2) have no education, only 5% have attended college and almost negligible percentage has attended University. The two samples also vary largely by mother's employment, with a higher percentage amongst the marginalized (Sample 2) being employed as compared to the non-marginalized (Sample 1), however mostly in low-skilled daily jobs. Similarly, the samples also vary by father's education, basic standard of living, tenure and occupancy rate, all clearly depicting the differences between the marginalized (Sample 2) and non-marginalized (Sample 1) datasets, with the marginalized sample (Sample 2) portraying typical characteristics of overcrowding and rented tenure.

[10] Bandel comes under the Hooghly District. It is a census town, which implies that it is a settlement that India's census classifies as urban although it continues to be governed as rural settlement.

Table 2. 1: Individual and Household Characteristics

		Non-marginalized (Sample 1)	Marginalized (Sample 2)	Combined	Difference
Religion	Hindu	0.973	0.927	0.947	0.046
		0.012	*0.017*	*0.011*	*0.022***
	Muslim	0.005	0.030	0.019	-0.025
		0.005	*0.011*	*0.007*	*0.014***
	Christian	0.022	0.043	0.034	-0.021
		0.011	*0.013*	*0.009*	*0.018*
Mother's Education	School	0.391	0.779	0.607	-0.388
		0.036	*0.027*	*0.024*	*0.044****
	College	0.402	0.052	0.207	0.350
		0.036	*0.015*	*0.020*	*0.036****
	University	0.163	0.009	0.077	0.154
		0.027	*0.006*	*0.013*	*0.025****
	None	0.043	0.160	0.108	-0.117
		0.015	*0.024*	*0.015*	*0.030****
	Mother Employed (=1)	0.429	0.979	0.738	-0.549
		0.037	*0.009*	*0.021*	*0.034****
Father's Education	School	0.257	0.671	0.488	-0.414
		0.032	*0.031*	*0.025*	*0.045****
	College	0.519	0.078	0.273	0.441
		0.037	*0.018*	*0.022*	*0.038****
	University	0.197	0.022	0.099	0.175
		0.029	*0.010*	*0.015*	*0.028****
	None	0.027	0.229	0.140	-0.202
		0.012	*0.028*	*0.017*	*0.033****
Family Background	Tenure (Rent =1)	0.169	0.839	0.547	-0.670
		0.028	*0.024*	*0.024*	*0.037****
	SOL (Basic =1)	0.951	0.949	0.950	0.002
		0.016	*0.014*	*0.011*	*0.021*
	Occupancy	2.350	4.265	3.423	-1.915
		0.134	*0.063*	*0.083*	*0.138****
	Family Size	5.366	4.504	4.881	0.862
		0.183	*0.089*	*0.096*	*0.190****
	N	184	233	417	417

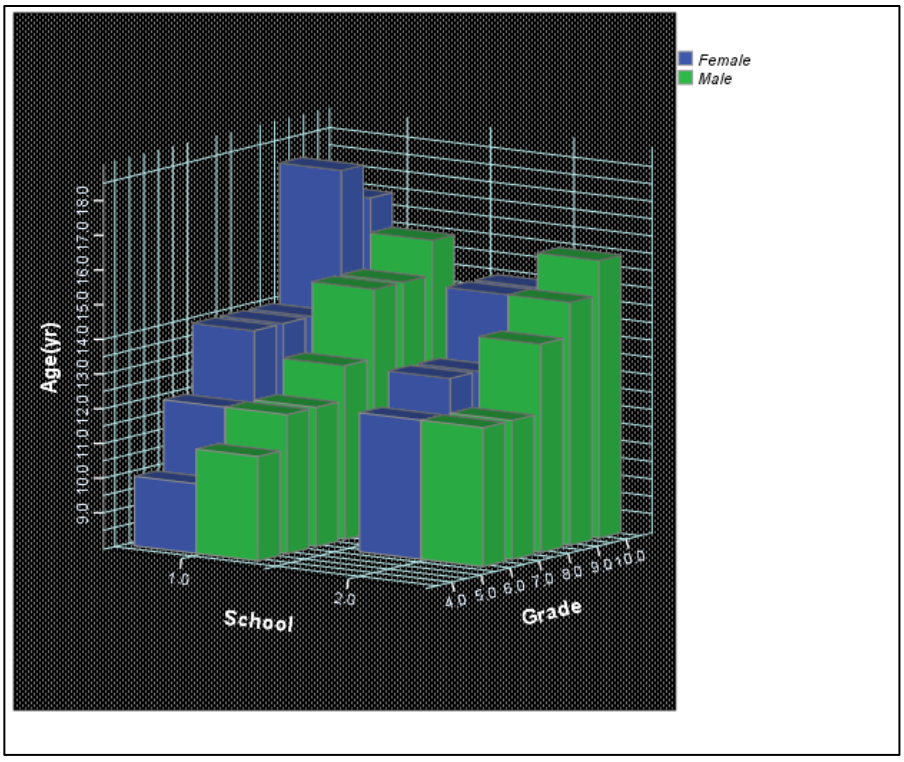
Note: Standard errors are presented in italics

The sample[11] in this study constitutes 78 students from *(School name removed for confidentiality)* and 106 students from *(School name removed for confidentiality)*, aged between 9-18 making 184 for Sample 1 (Non-marginalized). Sample 2 (Marginalized) constitutes of 236 students from *(School name removed for confidentiality)* aged between 9-17. Figure 2.1 shows the gender distribution of the Sample 1 by age, grade and school confirming the uniformity across both the schools that form part of Sample 1. Since the goal of this study is to explore the relationship between locus of control and age, to control for generational factors, data on parental education, occupation, income, household

[11] Refer to Appendix A.1 for sample allocation

structure, lifestyle and socioeconomic status is gathered using a questionnaire[12]. It is worth emphasizing at this point that both the samples that represent the marginalized and non-marginalized population in this study are independent of each other and the data was not collected at the same point of time. Therefore, the results after analysis of both the samples are pitted against each other only for the purpose of comparing the trend. They have not been pooled together for analysis.

Figure 2. 1: Gender distribution by Age, Grade and School (Sample 1)



For the purpose of data collection for Sample 1 in January 2018, I administered the questionnaires during regular school hours, with the Principal's permission. Most of the teachers chose to leave the classroom, though occasionally one would stay and do paperwork at the back of the room. Questionnaires took approximately 45 minutes to complete (15 minutes for the locus of control questions and 30 minutes for demographics). Two weeks prior to the day of survey, students were informed of the voluntary nature of participation, assured of confidentiality and consent was received. The students who did not consent to participate stayed in the class and continued with their work at their seat. Both the schools were visited a week apart and they were unaware of each other's

[12] Refer to Appendix A.2 for Questionnaire

participation in the study. Therefore, their choice to be involved in the study was independent of any peer school influence. Data for Sample 2 was collected in January 2016 during the after school training hours of the NGO. It was collected as part of the baseline survey before the randomized controlled trial. The questionnaire was administered by the trainers of the NGO.

2.3.2.Outcome Variable

Rotter (1966) defined locus of control as ‘‘the degree to which the individual perceives that [a] reward follows from, or is contingent upon, his own behaviour or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions’’ (p. 1). Therefore, theoretically in its forms of extremity, an individual with internal locus of control believes that reinforcements are determined by effort whereas an individual with external locus of control believes more in the merits of fate, luck or external forces in determining outcomes. The most commonly used measures of internality-externality in psychological literature has been Rotter’s (1966) 29-item Internal-External (I-E) Scale and Nowicki and Strickland’s (1973) 40-item scale for children. Though the Children’s Nowicki-Strickland Internal-External Control Scale (CNSIE) was created for children between 9 and 18, I could not afford to use it in this thesis due to time constraints. Therefore, the obvious alternative was to turn to Rotter’s (1966) I-E Scale. The I-E Scale has been used widely and by diverse populations like Black civil rights activists (Strickland B. R., 1965), adolescents (Klingman, Goldstein, & Lerner, 1991), women going through divorce (Morgan, 1988), therapy clients (Foon, 1986; Harper, Oei, Mendalgio, & Evans, 1990) and Bosnian refugees living in Norway (Van Selm, Sam, & Van Oudenhoven, 1997). The adaptability of I-E Scale is evident in not only the scales’ use with differing populations but also with differing forms both in terms of number of items and scale of the item (e.g. John, Gentry, Tansuhaj, Manzer, and Cho (1988) translated I-E Scale into 6-item Thai version with a 5-point Likert type scale).

The I-E Scale has been sparingly validated amongst the Indians living in India (Khanna & Khanna, 1979; Parsons & Schneider, 1974; Carment, 1974). However, it has not been utilized so far in understanding the locus of control differences between marginalized and non-marginalized children in India. Further, if one does aim to study locus amongst children, most likely one would turn to the 40-item CNSIE (Nowicki & Strickland, 1973). Given the time constraints, the aim here is to come up with a scale that measures the

general sense of control amongst the children in this study, for which Rotter's (1966) I-E Scale fits the need adequately. The I-E scale is not unidimensional (Hersch & Scheibe, 1967; Mirels, 1970; Reid & Ware, 1973). Largely there are three dimensions – (a) systems control (b) personal control and (c) general control ideology (Carment, 1974). I choose the items under "general control ideology" based on classifications suggested by studies in psychology (Parsons & Schneider, 1974).

The 29-item scale with dichotomous response categories is adapted to a 5-item Likert type scale for the purpose of this thesis. The wording is changed to make it more appropriate and relatable for the target population. Taking into consideration the socioeconomic context of the participants, Q2 and Q3 on the questionnaire is situation based (a hypothetical situation). Nevertheless, integrity is adhered to the theme of the original question on the I-E Scale. The questions are formulated in a third person character named Hari to minimize self-reporting biases, as children could feel conscious to give honest opinion when addressed in first person. I list below the questions along with the original item on Rotter's (1966) I-E Scale:

1. If Hari succeeds in life, would it be because of his own effort or will it be a matter of luck? (10 point scale)

(a) Reference item 11a – Becoming a success is a matter of hard work, luck has little or nothing to do with it (Rotter, 1966)

2. Hari works as a gardener in the house of a school teacher. When he got to know about Hari's love for books, he offered to teach Hari in the evening every day. However, for that Hari needs to finish work and then take out 2 hours every day in the evening and walk 2 Km to go to his house. What would you do if you were Hari?

(a) Reference item 11a – Becoming a success is a matter of hard work, luck has little or nothing to do with it (Rotter, 1966). Given this item forms the underlining theme of Q2, the motive is to check whether one believes hard work against odds could lead to success.

3. Hari plans to send his sisters to school and not let them work or get them married off soon. What would you do if you were Hari?

(a) Reference item 25a - Many times I feel that I have little influence over the things that can happen to me (Rotter, 1966). The aim of Q3 was to see given a choice to influence future outcome, what choices one makes.
(b) Reference item 9b- Trusting to fate has never turned out as well for me as making a decision to take a definite course of action (Rotter, 1966).
(c) Reference item 28 (CNSIE) - Most of the time, do you feel that you can change what might happen tomorrow by what you do today? (Nowicki & Strickland, 1973)

4. Do you think that Hari has control over the direction his life will take?

(a) Reference item 28b - Sometimes I feel that I don't have enough control over the direction my life is taking (Rotter, 1966).

5. Do you really believe that any child, who faces difficulties in life like Hari, can be whatever he/ she wants to be?

(a) Reference item 28a- what happens to me is my own doing (Rotter, 1966).
(b) Reference item 2f – Do you really believe a kid can be whatever he wants to be? (Bialer, 1961).

Each question has ordered options and the option selected determines the score for that answer. Consequently, the individual scores on all the five questions are added up to determine the total score on a 26-point scale that is used as the desired outcome variable in this study. I combine the five questions to form a scale because combining is more reliable and precise, and reduces measurement error (Spector, 1992). The same locus of control questionnaire is also used in the study presented in Chapter 3 for comparable reasons. Though Rotter's (1966) I-E Scale has been validated earlier for children, the derived scale that we use in this has not. Therefore, the first step was to validate the scale with the NGO I collaborated with. The scale went through many stages of development, as the NGO trainers who interact with the children on a daily basis and are well-versed with their abilities were involved at each stage. The scale was finalized after we reached a point when we jointly reached a conclusion the scale should be well understood by the children. This was also validated through informal trials of the questionnaire that was conducted by the trainers during their routine after-school training sessions. Therefore, it was considered that the children would not face trouble understanding the questionnaire. However, to test the dimensionality of the scale, I produce results from principal component factor analysis below.

Table 2.2 shows that the principal factor has an Eigenvalue of 1.832 and the next factor has an Eigenvalue of 1.096. Which implies that the scale is not completely unidimensional, however, the factor loading plot in Figure 2.2 shows that Q1-Q4 are high in the principal factor, it is Q5 that is high in the second factor. Q5 is based on item 28a on the I-E Scale that is categorized by psychologists as a general ideology of control question, which makes me comfortable enough to believe that the scale is measuring locus of control. Table 2.3 also provides the Cronbach's alpha for the scale that is 0.55 which is a fairly reliable value of alpha, given that earlier studies using the I-E scale has reported alpha ranging from -0.40 to 0.93 (Beretvas, Suizzo, Durham, & Yarnell, 2008). Not undermining the aim to have an alpha greater than 0.65, I have confidence in this scale since the scale is fairly consistent and my only aim is to focus on the difference in results between two groups of children.

Table 2. 2: Principal component factor analysis of Locus of Control questions

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.832	0.736	0.367	0.367
Factor2	1.096	0.347	0.219	0.586
Factor3	0.749	0.020	0.150	0.736
Factor4	0.729	0.136	0.146	0.881
Factor5	0.593	.	0.119	1.000

Variable	Factor1	Factor2	Uniqueness
Q1	0.674	-0.411	0.377
Q2	0.651	-0.430	0.391
Q3	0.651	0.141	0.557
Q4	0.651	0.320	0.473
Q5	0.326	0.787	0.274

Figure 2. 2: Factor Loading plot and Screeplot Locus of Control questions

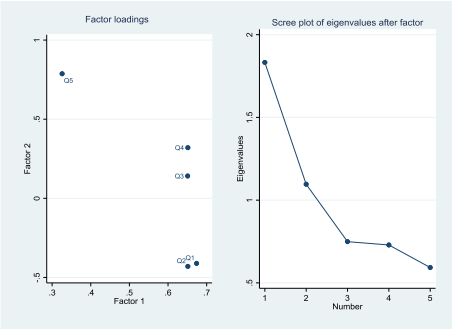


Table 2. 3: Cronbach's alpha

Item	Observations	Sign	Item-test correlation	Item-rest correlation	Average interim correlation	alpha
Q1	420	+	0.6242	0.348	0.1848	0.4755
Q2	420	+	0.6127	0.3323	0.1905	0.4849
Q3	420	+	0.6355	0.3635	0.1791	0.4661
Q4	420	+	0.6464	0.3787	0.1737	0.4567
Q5	420	+	0.4733	0.1559	0.26	0.5843
Test Scale					0.1976	0.5519

Participants did not report any trouble with understanding the questionnaire and the average time taken to complete the five questions was 20 minutes. The length of time taken also supports the argument that responses were not random. The time taken was consistent across both groups of children, most likely because the marginalized children also belonged to a school where the medium of education is English.

2.3.3.Methodology

This chapter focuses on finding out whether or not age plays a significant role in determining locus of control amongst children in a developing country like India and

further compares the developmental trend of locus between a group of marginalized children and non-marginalized children. In order to answer this I carry out ordered logit regressions to account for the fact that the response categories on the scale might not be equidistant. Ordinal outcomes can be analysed using linear regression model [13] too, however, there is an underlying assumption of equal distances between categories in that case which might not be the perfect way to approach. An ordered logit model with ordinal response Y_i with C categories for the i^{th} individual, alongside a vector of covariates X_i, is defined by a set of C-1 equations, where the cumulative probabilities $g_{ci} = P\ (Y_i \leq\ y_c|X_i)$ are related to a linear predictor $\beta' X_i = \ \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots$ through the logit function:

$$logit\ (g_{ci}) = \log\left(\frac{g_{ci}}{1 - g_{ci}}\right) = \ \alpha_c - \ \beta' X_i, \qquad c = 1, 2, \ldots (C - 1)$$

The parameters α_c are thresholds or cut points, and are in increasing order ($\alpha_1 < \alpha_2 < \alpha_3 < \cdots < \alpha_{c-1}$). Now, Y_i can be represented by an underlying unobserved latent continuous dependent response Y_i* with thresholds α_c^* such that,

$$Y = \begin{cases} 0 \quad if\ Y^* \leq\ \alpha_1^* \\ 1 \quad if \ \ \alpha_1^* \leq\ Y^* \leq\ \alpha_2^* \\ 2 \quad if \ \ \alpha_2^* \leq\ Y^* \leq\ \alpha_3^* \\ \cdot \\ \cdot \\ N \quad if \ \ \alpha_{c-1}^* \leq\ Y^* \end{cases}$$

Where, the latent variable Y* can be expressed as a function of a set of factors at the individual and household level that affect locus (X):

$$Y_i^* = X_i' \beta^* \ + \ \varepsilon_i$$

[13] Refer to Appendix A.5 for linear regression results

2.4. Results

Figure 2.3 shows the k-density plots of the two groups of children for the outcome variable of interest. K-density is calculated using individual sample means. The graph shows that locus of control between two groups are not comparable. Sample 2, representing the marginalized group of students have z-scores that are majorly distributed on the negative side of group mean, whereas the distribution of Sample 1 representing non-marginalized children is concentrated towards the right of group mean. In addition, Figure 2.4 projects a clear tendency of locus of control shifting towards external orientation with age amongst the marginalized, whereas, it tends to be more internal with age amongst the non-marginalized. We also observe that locus of control increases at a decreasing rate with age amongst the non-marginalized until one enters adolescence and then we observe a subtle fall in locus of control. This inverted U-shape of locus with age is consistent with the literature that records evidences of locus becoming slightly more external between 9th and 10th grade which constitutes of the age group 16-18 in this study (Chubb, Fertman, & Ross, 1997; Kulas, 1996). This can be explained by the fact that that during this period children begin high school, where they face new requirements, new subjects, matriculation exams and especially in India is under the spotlight for their career choice. As the graph shows, this instability leads to an increase in external locus of control.

Figure 2. 3: k-density of Locus of Control by Sample

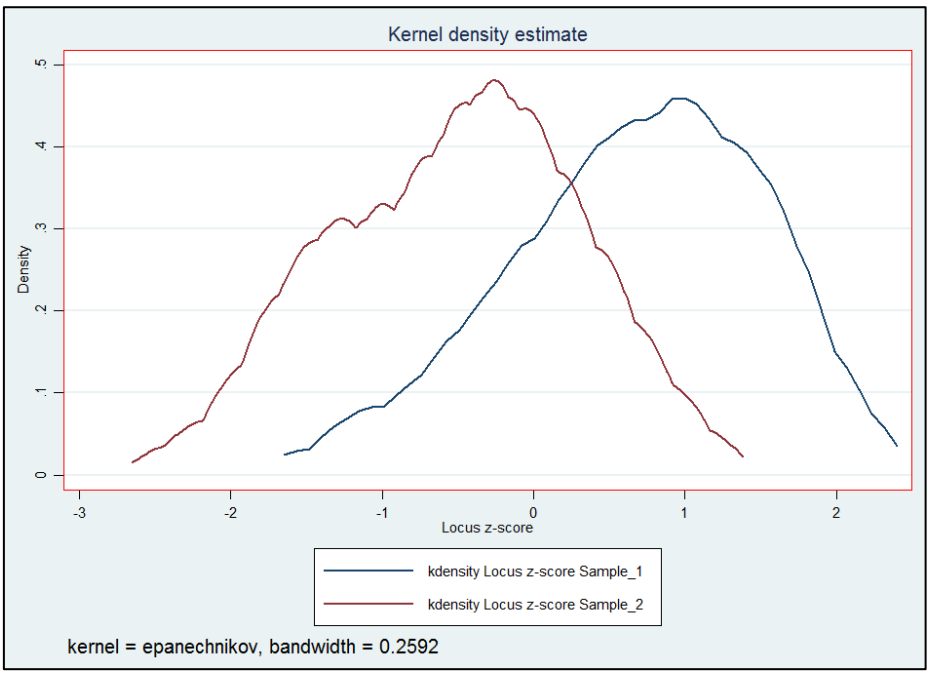


Figure 2. 4: Box plot of Locus of Control by Age and by Sample

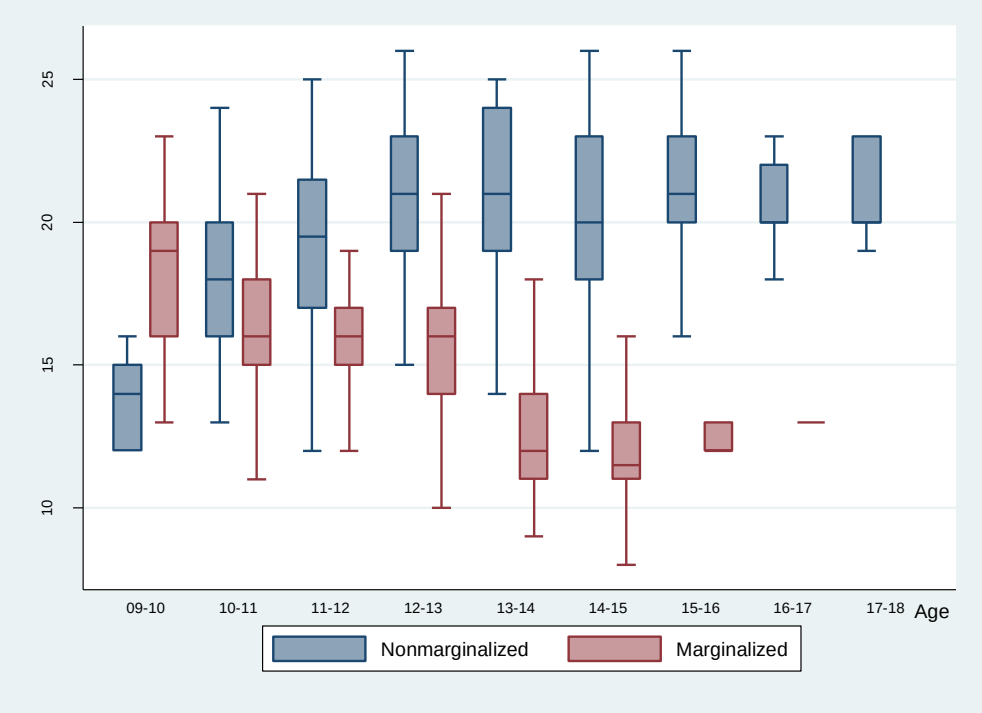


Table 2.4 shows results from running ologit regression for Sample 1(Non-marginalized), to study the effect of age on children's locus of control. We notice that through regression (1) to regression (5) locus of control remain positively associated with age, even after controlling for all parental and family socioeconomic factors. The effect of age varies by school initially until regression (4). The students of *(School name removed for confidentiality)* appear marginally but significantly more externally oriented than students from *(School name removed for confidentiality)*. This school specific effect might be a representation of peer effect or (and) due to the difference in household characteristics. However, the significance disappears once the parental and family attributes are introduced to the model, explaining the fact that it is not as much of the school specific factors but the parental or family background factors that are playing a distinguished role in motivating the locus of control amongst children in this sample.

Since, more often than not the shift of a behavioural attribute is not linearly associated with age, I introduce the term age^2. Though locus of control has a significant positive association with age, with age^2 the relationship is negative. This implies that the positive developmental relationship of locus with age becomes weaker as age increases. Locus of control has been suggested earlier to be most impressionable between age 8 and 14 or 15.

Therefore, the weakening effect of age on locus is not surprising, as eventually locus like any personality trait would stabilize. In addition, it is noteworthy that upon inclusion of age^2, the effect of age becomes stronger. Besides age, some of the parental and family variables also play a significant role in influencing locus of control. Both the parents attending University in reference to not being educated at all has a significant effect on the child's locus of control. However, the effect of mother attending University is negative, whereas, father attending University is positive. This could be explained by the fact that when the father has attended University, he is more likely to be an achiever and that might have a positive influence on the child's locus. However, when the mother has attended University, with education there might also come an authoritative parenting style of the mother that might lead to external locus of control in the child. Amongst others, parental involvement factors, religion, occupancy rate also have significant influence on locus, and the results conform to the norm. Being part of the majority religion or growing up in a larger family where one might have to fight for his or her own share of bread, makes one internally oriented. Locus does not vary significantly by gender in this sample.

Table 2. 4: Cross-sectional Analysis, Ordered logit regression I (Sample 1)

	(1)	(2)	(3)	(4)	(5)	(6)
Individual Variables:						
Age	0.249 (0.117)**	0.266 (0.116)**	3.498 (1.101)***	3.510 (1.091)***	3.110 (0.765)***	3.268 (0.869)***
School_2		0.235 (0.124)*	-0.121 (0.040)***	-0.135 (0.004)***	-0.087 (0.481)	-0.128 (0.36)
Age^2			-0.124 (0.037)***	-0.124 (0.036)***	-0.108 (0.022)***	-0.113 (0.026)***
Gender (female=1)				-0.059 (0.072)	-0.122 (0.245)	-0.004 (0.262)
First Born (=1)				0.088 (0.168)	-0.119 (0.009)***	-0.038 (0.026)
Parental Variables:						
Mother Edu (=School)					0.473 (0.973)	0.613 (0.818)
Mother Edu (=College)					-0.154 (0.375)	0.036 (0.328)
Mother Edu (=Uni)					-0.444 (0.089)***	-0.322 (0.051)***
Mother_Employed (=1)					0.473 (0.417)	0.542 (0.463)
Father Edu (=School)					0.009 (1.127)	-0.304 (0.834)
Father Edu (=College)					0.615 (0.73)	0.443 (0.613)
Father Edu (=Uni)					1.192 (0.635)*	0.987 (0.395)**
parents_tk_note (once/month)					-0.830 (0.423)**	-0.859 (0.455)*
parents_tk_note (once/ week)					-0.181 (0.616)	0.001 (0.602)
parents_tk_note (everyday)					-0.164 (0.210)	-0.024 (0.248)
parents_sch_vst (when called)					-0.665 (0.395)*	-0.760 (0.361)**
parents_sch_vst (1/3 months)					0.193 (0.565)	0.046 (0.462)
Family Variables:						
Religion (=Hindu)						0.411 (0.190)**
Religion (=Muslim)						2.362 (0.044)***
Family Size						0.010 (0.046)
Occupancy Rate						0.148 (0.057)**
No of Observations	184	184	184	184	183	181
Pseudo R-Sq.	0.015	0.016	0.034	0.034	0.055	0.063

*Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Dependent Variable is Locus of Control score on 26-point scale; Omitted Variables: School01; parents_tk_note (never); parents_sch_vst (never); Religion: Christian; Mother Edu None; Father Edu None. Refer to Appendix A.10 for detailed description of variables.*

Table 2.5 presents results of ologit regression after controlling for grade [14] of the participating student. Grade has been earlier suggested as a significant factor that influences locus. When I introduce grade in my model in Table 2.5, after controlling for all other viable factors, age continues to hold a significant and positive impact on locus of control that weakens as one grows older. In addition, the effect of being at a higher grade also has a strong and significant effect on locus of control, the association of grade being stronger than age. Higher grade implies successive progression in earlier grades, therefore more successful endeavours in one's basket, might be the plausible justification of the results. The major difference between Regression I in Table 2.4 and Regression II in Table 2.5 is the effect of school (2- *(School name removed for confidentiality)*) that remains consistently negative on locus as compared to school (1-*(School name removed for confidentiality)*) in Table 2.5. This indicates that there is a school specific effect that is in play distinguishing the locus of control between two schools. Table 2.6 presents the results from the final ologit regression that controls for the interaction between age and grade. The stand-alone effects of both age and grade continue to remain strongly positive and significant. In addition, we see that the effect of age within each grade is negative implying that as age increases within each grade the developmental relationship of locus with age tends to be oriented externally. Therefore, the older students within the same grade may be relatively more external than the younger peers. This is rationale, as being the older one in a grade as compared to peers might either be because one has failed to progress to next grade or one just started schooling at a later age. Whatsoever, under such circumstances in all possibility one might feel lesser control over life. Overall, the fact that remains consistent is the developmental trend in locus of control with age that tends to be *internally* oriented with age amongst the non-marginalized group of students.

Turning to the sample of marginalized children (Sample 2), Table 2.7 summarizes the results of ologit regression with locus of control score as the dependent variable. Locus of control exhibits a significant negative developmental relationship with age, which implies that older the child grows greater are the odds that the child would be externally oriented. In addition, this effect is not linear, the size of the effect becomes significantly larger with age. This implies that belief strengthens over time with age. This result is contradictory to the trend observed amongst the non-marginalized children in Sample 1. In this study, I

[14] Grade here signifies the year of study in School. A typical Indian Schooling system runs from 1st Grade to 10th Grade. Students have to appear for matriculation exam at the end of their 10th Grade.

Table 2. 5: Cross-sectional Analysis, Ordered logit regression II (Sample 1)

	(1)	(2)	(3)	(4)	(5)
Individual Variables:					
Age	0.116 (0.01)***	-0.071 (0.012)***	1.153 (0.075)***	0.645 (0.182)***	0.801 (0.069)***
_IGrade_5	2.059 (0.123)***	2.242 (0.092)***	1.999 (0.167)***	1.978 (0.459)***	2.274 (0.339)***
_IGrade_6	3.035 (0.261)***	4.041 (0.127)***	3.625 (0.025)***	3.906 (0.451)***	4.193 (0.329)***
_IGrade_7	3.722 (1.515)**	4.745 (1.250)***	4.199 (1.000)***	4.582 (1.713)***	4.963 (1.656)***
_IGrade_8	3.377 (0.588)***	4.46 (0.230)***	3.763 (0.014)***	3.963 (0.455)***	4.164 (0.294)***
_IGrade_9	2.855 (0.114)***	4.093 (0.252)***	3.432 (0.516)***	3.740 (0.026)***	3.900 (0.181)***
_IGrade_10	2.925 (0.538)***	4.235 (0.153)***	3.621 (0.180)***	3.799 (0.009)***	4.180 (0.064)***
School 2		-0.859 (0.151)***	-0.873 (0.065)***	-0.784 (0.337)**	-0.788 (0.177)***
Age^2			-0.044 (0.006)***	-0.025 (0.011)**	-0.029 (0.001)***
Gender (female=1)			0.095 (0.154)	0.057 (0.304)	0.216 (0.309)
First Born (=1)			0.062 (0.201)	-0.136 (0.025)***	-0.037 (0.091)
Parental Variables:					
Mother Edu (=School)				0.202 (1.108)	0.446 (0.667)
Mother Edu (=College)				-0.795 (0.655)	0.245 (0.346)
Mother Edu (=Uni)				-0.781 (0.261)***	-0.544 (0.003)***
Mother_Employed (=1)				0.239 (0.376)	0.293 (0.362)
Father Edu (=School)				0.214 (0.705)	-0.183 (0.08)**
Father Edu (=College)				0.549 (0.415)	0.280 (0.029)***
Father Edu (=Uni)				1.087 (0.523)**	0.849 (0.04)***
parents_tk_note (once/month)				-0.649 (0.211)***	-0.541 (0.267)**
parents_tk_note (once/ week)				0.128 (0.600)	0.387 (0.602)
parents_tk_note (everyday)				-0.256 (0.464)	-0.035 (0.473)
parents_sch_vst (when called)				-0.901 (0.590)	-1.032 (0.552)*
parents_sch_vst (1/3 months)				0.157 (0.366)	-0.082 (0.244)
Family Variables:					
Religion (=Hindu)					0.155 (0.146)
Religion (=Muslim)					2.055 (0.340)***
Family Size					0.023 (0.057)
Occupancy Rate					0.240 (0.093)***
No of Observations	184	184	184	183	181
Pseudo R-Sq.	0.055	0.062	0.064	0.085	0.097

*Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Dependent Variable is Locus of Control score on 26-point scale; Omitted Variables: Grade 4; parents_tk_note (never); parents_sch_vst (never); Religion: Christian; Mother Edu None; Father Edu None. Refer to Appendix A.10 for detailed description of variables.*

Table 2. 6**: Cross-sectional Analysis, Ordered logit regression III (Sample 1)**

	(1)	(2)	(3)	(4)	(5)
Age	1.091 (0.146)***	1.093 (0.143)***	3.234 (0.381)***	2.908 (0.837)***	2.634 (0.489)***
_IGrade_5	23.600 (2.698)***	23.713 (2.598)***	21.424 (2.129)***	24.561 (6.331)***	28.628 (9.767)***
_IGrade_6	14.991 (10.726)	17.139 (11.842)	13.267 (8.713)	23.451 (17.149)	25.002 (15.972)
_IGrade_7	6.046 (6.324)	10.487 (5.380)*	4.645 (7.844)	8.982 (3.830)**	10.794 (2.717)***
_IGrade_8	11.157 (6.283)*	16.990 (8.327)**	8.420 (11.569)	13.775 (6.803)**	14.465 (8.351)*
_IGrade_9	15.210 (2.762)***	18.226 (0.327)***	4.218 (3.834)	10.212 (1.628)***	14.125 (0.720)***
_IGrade_10	11.470 (4.567)**	14.124 (2.233)***	-1.345 (1.730)	3.293 (2.833)	6.456 (0.444)***
Age*grade_5	-2.094 (0.249)***	-2.103 (0.241)***	-1.877 (0.183)***	-2.187 (0.548)***	-2.559 (0.887)***
Age*grade_6	-1.182 (0.936)	-1.309 (1.065)	-0.947 (0.782)	-1.870 (1.489)	-1.988 (1.391)
Age*grade_7	-0.366 (0.600)	-0.688 (0.496)	-0.159 (0.712)	-0.557 (0.409)	-0.692 (0.314)**
Age*grade_8	-0.835 (0.484)*	-1.244 (0.615)**	-0.505 (0.884)	-1.006 (0.511)**	-1.072 (0.610)*
Age*grade_9	-1.162 (0.218)***	-1.346 (0.075)***	-0.215 (0.243)	-0.750 (0.075)***	-1.055 (0.111)***
Age*grade_10	-0.904 (0.314)***	-1.060 (0.184)***	0.162 (0.116)	-0.290 (0.149)*	-0.533 (0.098)***
School 2		-0.852 (0.109)***	-0.827 (0.181)***	-0.699 (0.513)	-0.655 (0.375)*
Age^2			-0.108 (0.014)***	-0.078 (0.025)***	-0.059 (0.008)***
No of Observations	184	184	184	183	181
Pseudo R-Sq.	0.064	0.070	0.071	0.096	0.109

*Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Dependent Variable is Locus of Control score on 26-point scale; Omitted Variables: Grade 4; parents_tk_note (never); parents_sch_vst (never); Religion: Christian; Mother Edu None; Father Edu None*
See Appendix A.7 for detailed result.

compare the trend of locus of control with age between two independent samples, collected at two different points in time, however same developmental context. The results show a positive developmental trend of locus amongst non-marginalized children and a negative developmental trend amongst marginalized children. Therefore, that could be a possible hint to the fact that when the child is born to socioeconomic adversity, the experience of marginalization may lead to excessive belief in externalities and one's locus of control may be externally oriented with age as opposed to the norm[15]. This reversal of trend might be owing to the unsuccessful interactions with the environment in reaching desired outcomes when born to socioeconomic adversity.

2.5. Conclusion

This chapter compares the developmental trend in locus of control with age between children from marginalized background and non-marginalized background in India. It uses a cross-sectional dataset of 184 children aged between 9-18 coming from two schools in West Bengal (India) representing the non-marginalized population and a second cross-sectional dataset constructed of 236 children aged between 9-17 coming from a school located in a urban poor location in Bangalore (India) representing the marginalized population. Overall, the results of the non-marginalized sample of students conform to earlier studies that suggest that locus of control tends to be *internally* oriented as one grows older and accumulates more power to control outcomes in life. However, this association weakens, as one grows older. Besides age, a strong grade effect is also observed. Growing older is implicit of growing experience or successful encounters with the world. However, progression in grade is a superior indicator of increase in number of successful encounters in life. Therefore, it is not surprising that we observe the effect of grade to be stronger than that of age alone for non-marginalized children. The results of the marginalized sample of students exhibit a reversal in this trend and shows that as a child grows older under socioeconomic adversity one tends to be more *externally* oriented and this belief only strengthens with age. This could be owing to the hardships and obstacles of socioeconomic adversity that lead to unsuccessful endeavours. Overall, the results are robust but the data for the two different samples were collected at two different points in time. Therefore, the

[15] Increase in internality of control have been observed amongst children with age earlier by many researchers (Stipek, 1980; Landau, 1995; Cairns, Duffy, McWhirter, & Barry, 1990)

results should only be considered indicative of a possible behavioural bias that may be existing amongst marginalized children and further rigorous studies that work with bigger samples could be helpful in pinning down the same. However, the results in this chapter are indicative of a significant problem of socioeconomic adversity that the experience of it may lead to an external locus of control with age. Therefore, in the next Chapter I discuss the impact of being exposed to socioeconomically adverse stimuli in a classroom environment on the locus of control of marginalized children. This chapter contributes significantly to the literature, as this is the first locus of control study focussed on primary and middle school children from India. The study is also novel as it attempts to compare the developmental path of locus of control between marginalized and non-marginalized children that has not been done before.

Table 2. 7: Cross-sectional Analysis, Ordered logit regression (Sample 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.846 (0.08)***	-1.985 (0.905)**	-2.256 (1.458)	-2.256 (1.457)	-3.252 (1.548)**	-3.111 (1.576)**
Age^2		0.046 (0.037)	0.081 (0.057)	0.081 (0.057)	0.122 (0.06)**	0.116 (0.061)*
_IGrade_5			-1.106 (0.507)**	-1.100 (0.507)**	-1.124 (0.538)**	-1.129 (0.541)**
_IGrade_6			-1.597 (0.679)**	-1.598 (0.679)**	-1.288 (0.723)*	-1.310 (0.731)*
_IGrade_7			-1.026 (0.865)	-1.039 (0.865)	-0.926 (0.939)	-0.934 (0.947)
_IGrade_8			-4.076 (1.025)***	-4.095 (1.026)***	-4.362 (1.102)***	-4.305 (1.112)***
_IGrade_9			-4.441 (1.138)***	-4.461 (1.139)***	-4.885 (1.261)***	-4.909 (1.274)***
Gender (male =1)				0.071 (0.232)	0.016 (0.247)	-0.011 (0.248)
Mother Edu (=School)					0.237 (0.34)	0.239 (0.344)
Mother Edu (=College)					1.076 (0.639)*	1.072 (0.639)*
Mother Edu (=Uni)					3.059 (1.274)**	3.141 (1.285)**
Mother_Employed (=1)					-0.004 (0.26)	-0.032 (0.262)
Father Edu (=School)					-0.023 (0.312)	-0.019 (0.314)
Father Edu (=College)					-0.881 (0.534)*	-0.877 (0.535)
Father Edu (=Uni)					-0.093 (0.804)	-0.153 (0.824)
parents_tk_note (results out)					4.375 (1.604)***	4.499 (1.613)***
parents_tk_note (once/month)					4.581 (1.606)***	4.715 (1.623)***
parents_tk_note (once/ week)					4.794 (1.723)***	4.964 (1.736)***
parents_tk_note (everyday)					4.695 (1.653)***	4.8 (1.671)***
parents_sch_vst (when called)					-0.432 (0.437)	-0.438 (0.439)
parents_sch_vst (1/3 months)					-0.830 (0.455)*	-0.840 (0.456)*
Family Size						0.003 (0.092)
Religion (=Hindu)						1.610 (1.355)
Religion (=Muslim)						2.014 (1.481)
Religion (=Christian)						1.850 (1.483)
No of Observations	236	236	236	236	231	231
Pseudo R2	0.112	0.113	0.151	0.151	0.176	0.178

*Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Dependent Variable is Locus of Control score on 26-point scale; Omitted Variables: Grade 4; parents_tk_note (never); parents_sch_vst (never); Religion: None; Mother Edu None; Father Edu None; Refer to Appendix A.10 for detailed description of variables.*

Chapter 3

Socioeconomic Adversity Priming, Life-skill Training to mitigate the Impact on Perseverance: Evidence from India

Abstract

I show that perseverance, a non-cognitive skill that is integral to gritty behaviour that has been shown to be highly predictive of achievement, is affected under the influence of socioeconomic adversity priming. I use the method of priming to create socioeconomic variation between two groups of children. I further show that perseverance is malleable in the childhood period and can be fostered in classroom environment by treating one's locus of control. The evidence comes from the evaluation of a randomized controlled trial implemented in a school that is located in an urban poor location in Bangalore (India). The participants are aged between 9-17 and belong to marginalized households. Outcomes are measured via a novel effort-chance task and locus of control questionnaire. The results show that children primed with socioeconomic adversity are more externally oriented, less likely to persist at effort and more likely to depend on chance for an outcome rather than taking control of outcomes. This effect of adversity on one's attitude to persevere is mitigated effectively when one is treated with a combination of role-model and life-skill intervention that challenges one's excess belief in externalities. However, the malleability of locus reduces with age.

3.1 Introduction

According to a new analysis[16] from the World Bank Group and UNICEF (2016) children are more than twice as likely as adults to live in extreme poverty. The effects of poverty are most damaging to children. Deprivations they suffer affect the development of their bodies and their minds. The consequences of inadequate nutrition, a lack of early stimulation and learning, and exposure to stress last a lifetime. They lead to stunted development, low levels of skills needed for life and work, limited future productivity as adults, and intergenerational transmission of poverty. Beyond this tragic impact on human life and potential, neglecting children fails to build the human capital needed for sustained economic prosperity in today's world. Understanding the problem better is a vital step towards tackling it successfully.

The paucity of achievement amongst underprivileged children can singularly restrain socioeconomic transformation despite all endeavours. Poverty exposes children to an array of convoluted socioeconomically adverse conditions that lead to impeded academic and adult attainment in the labour market (Sewell, Haller, & Portes, 1969; Hauser, Tsai, & Sewell, 1983; Haveman & Wolfe, 1995; Duncan & Brooks-Gunn, 1997; Engle & Black, 2008). However, at the centre of debate has been the mechanism through which socioeconomic adversities limit human capital accumulation. Broadly, there are three causal pathways identified in the literature. The first two, direct effects of material constraints (Becker, 1993; Mincer, 1974; Kaushal, Magnuson, & Waldfogel, 2011) and indirect effects through cognitive abilities (Lee & Burkam, 2002; Heckman, 2006) have been well investigated. The one that remains majorly under-investigated is the effect that operates through non-cognitive skills. Though there is suggestive evidence that marginalization may lead to non-cognitive incompetency[17], the mechanism is still less informed. A growing body of research in human capital accumulation not only emphasizes the significance of non-cognitive skills in explaining individual differences in achievement outcomes (Heckman, Stixrud, & Urzua, 2006; Borghans, Duckworth, Heckman, & Weel,

[16] This briefing note released jointly by the World Bank and UNICEF finds that in 2013 19.5% of children in developing countries were living in households that survived on an average of US$1.90 a day or less per person, compared to just 9.2 % of adults. Globally, almost 385 million children were living in extreme poverty.

[17] Subjective well-being like happiness, self-confidence, self-esteem (Howell & Howell, 2008; Rojas, 2008)

2008)[18] but is also suggestive of its primacy in terms of predictive power relative to cognitive skills (Kautz, Heckman, Diris, Weel, & Borghans, 2014). For long economists have been reluctant to focus on the role of non-cognitive skills due to their lack of malleability and ambiguous measurement standards. Nevertheless, there is now ample evidence that non-cognitive skills are malleable through educational interventions, especially in the childhood period (Almlund, Duckworth, Heckman, & Kautz, 2011; Kautz, Heckman, Diris, Weel, & Borghans, 2014) and experimental economics has been transformative in innovating elicitation methods. Therefore, given the required tools at hand it is imperative in the interest of socioeconomic transformation that we explore the non-cognitive pathways that moderate the interaction between socioeconomic adversities and lack of achievement outcomes. Randomized studies that investigate this possible causal association are few.

The non-cognitive pathway that I discuss in this chapter is *Perseverance*. *Perseverance* is the attitude of striving to achieve a goal. One could say that perseverance is a critical building block of the much discussed gritty[19] behaviour. Although it has the potential to influence a myriad of economic outcomes, it has not been extensively researched in economics. Gritty behaviour has been associated with educational attainment, high school completion and even the choice to stay in a union (Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009; Eskreis-Winkler, Duckworth, Shulman, & Beal, 2014). Grittier individuals would believe more in investing consistent effort in practising a skill, even in the absence of any short-term reward, leading to higher chances of achievement. However, in this study I choose to focus on *perseverance* and not grit that involves long-term goal setting behaviour alongside perseverance. Being gritty is implicit of being *perseverant*, being determined at an endeavour despite repeated failures and this attitude is often valued more than cognitive ability or independent thought by employers in low-skill labour market (Bowles, Gintis, & Osborne, 2001). Therefore, *perseverance* could be instrumental especially in case of the marginalized as it could aid them mediate the effects of stringent socioeconomic conditions. However, it is yet unknown whether or not

[18] The literature has established the predictive power of non-cognitive skills like patience, self-control, risk attitude in terms of educational, occupational, financial, health and social attainment (Heckman, Stixrud, & Urzua, 2006; Almlund, Duckworth, Heckman, & Kautz, 2011; Dohmen, et al., 2011; Sutter, Kocher, Glätzle-Rützler, & Trautmann, 2013; Heckman, Humphries, & Mader, 2011; Castillo, Ferraro, Jordan, & Petrie, 2011)

[19] Grit is the ability to set long-term goals and *persevere* for the same.

being exposed to adverse socioeconomic stimuli has any significant effect on one's *perseverance*. The odds are quite high given that in producing gritty behaviour, belief plays a crucial role (Alan, Boneva, & Ertac, 2016)[20]. It is one's belief in the efficacy of effort that makes one more *perseverant*. If belief in the merits of effort is low, one might not return to exert effort after a cycle of negative feedback and rely more on happenstance as a means of reaching the goal - and this generalized belief about the efficacy of effort is the construct of *locus of control* (Rotter, 1966). There is evidence in psychology literature to support the theory that internal locus of control leads to investing higher effort (Rotter, Liverant, & Crowne, 1961). The ones who live under adverse socioeconomic conditions run the risk of developing an external locus of control due to their likelihood of success in any endeavour being constrained by austerity. The external locus of control may then make the marginalized less perseverant after their efforts have failed most times. Though the ultimate decision to persevere in academic, labour market and other life scenarios is a culmination of many interacting factors, this nexus between *locus* and *perseverance* could explain the rationale behind exogenous socioeconomic variation remaining central to the discussion of persistence theory (Tinto, 1975; Ethington & Smart, 1986). This plausible channel of effect from socioeconomic adversity to perseverance might lead to self-defeating behaviours amongst the marginalized, like lack of proactive effort in taking advantage of opportunities available or lack of willingness to reach out for information for making better choices. Though there is no empirical evidence yet that confirms any impact on *perseverance* under the influence of adversity, the poor have often been blamed for being lazy[21]. This chapter discusses the impact of being exposed to socioeconomic adversities on one's *locus of control* and its moderating effect on *perseverance*.

It is imperative to focus on the relationship between socioeconomic adversity and perseverance because such an attitude could augment the process of socioeconomic transformation and the lack of it may manifest in more pronounced ways by potentially diminishing the marginal benefits of relaxing external constraints. With *perseverance* in possession, one is likely to inculcate the habit of persisting effort longer and harder as

[20] In a classroom environment in Turkey, researchers were able to foster gritty behaviour amongst children who were treated with an educational intervention that aimed at altering beliefs (Alan, Boneva, & Ertac, 2016).

[21] Adult earning effects have been suggested to operate through early poverty's association with adult work hours (Duncan, Ziol-Guest, & Kalil, 2010)

failure is less likely to discourage one under difficult circumstances and this can lead to significant long-term pay offs for the ones surviving socioeconomic adversities. Sen (1995) describes poverty as capability deprivation. When children are born to socioeconomic adversities, they not only suffer from material constraints but also a range of interconnected disadvantages that leave them powerless and hinder their ability to get ahead. In the 'voices of the poor' by World Bank (Narayan, Chambers, Shah, & Petesch, 2000) people were quoted describing the experience of poverty as, "….exhaustion and poverty of time; exclusion, rejection, isolation and loneliness; bad relations with others, including bad relations within the family; insecurity, vulnerability, worry, fear and low self-confidence; and powerlessness, helplessness, frustration and anger" (p.12). Children are highly susceptible to early environmental influence and when the child is born to such context his most malleable years of development are at the disposition of vulnerability, which may now shape the way the child's behavioural development unfolds. Therefore, growing up under adverse socioeconomic conditions could mean the rejection; the isolation; the exclusion could very well lead to biased beliefs, *locus of control* being one of the many.

Locus has been linked to several economic phenomenon in education (Crandall, Katkovsky, & Crandall, 1965; Bar-Tal & Bar-Zohar, 1977; Heckman & Kautz, 2012), human capital investment (Coleman & DeLeire, 2003), labour market (Andrisani, 1977; 1981; Piatek & Pinger, 2010; Cobb-Clark & Tan, 2011), addiction behaviour (Goss & Morosko, 1970; Berzins & Ross, 1973; Calicchia, 1974; Stuart, Borland, & McMurray, 1994) and health (Strudler Wallston & Wallston, 1978). However, the factor that intricately relates *locus of control* and all of the above discussed outcomes is one's effort or alternatively *perseverance*. Internally oriented individuals have been suggested as more capable of obstacles and in developing constructive response to frustration (Brisset & Nowicki, 1973). On the contrary, individuals who are externally oriented have been described as being self-pitying (Plares, 1968). Therefore, possessing internal sense of control may well work in stride of the disadvantaged, helping them to cope with adversities better. Locus, like any other belief is not a stable characteristic of personality or environment and besides an array of other factors, there is a heavy influence of socioeconomic conditions in shaping locus of control (Battle & Rotter, 1963; Beauvois & Dubois, 1988; Landau, 1995). This susceptibility of locus to the influence of socioeconomic adversities and its moderating impact on perseverance opens up the opportunity to better chances of social transformation by intervening locus, as famously suggested by Bandura (1990) that even under most

stringent conditions only through perseverance one may often figure out ways of exercising some measure of control. Not surprisingly, *locus of control* has been found to have significant independent effect on social mobility (Von Stumm, Gale, Batty, & Deary, 2009).

In this study, I carry out a randomized controlled trial where I create exogenous variation in socioeconomic adversity between two groups through the method of priming and study the effect of being exposed to socioeconomically adverse stimuli on *locus* and *perseverance.* Thereafter, I provide evidence that the effect of adversity on *perseverance* can be mitigated by treating *locus* with a combination of life-skill training and role model effect. Evidence suggests that grit can be promoted by educating one with belief altering interventions (Alan, Boneva, & Ertac, 2016). However, while this type of mind-set that promotes belief in effort is likely to indeed improve achievement outcomes, we do not know whether such treatments on belief can go far enough to mitigate the impact of adversity on *perseverance*. This study explores the efficacy of interventions that intend to treat *locus of control* in mitigating the impact of adversity on one's real choice of *perseverance*, when one has the alternative of depending on chance available as an option. The evidence comes from the evaluation of a randomized controlled trial in a rural urban location in the city of Bangalore (India) with 236 students in collaboration with an NGO that has been providing life-skill training to vulnerable children from adverse socioeconomic background since 1999 and has 40 partner schools. The malleability of locus of control has been argued in literature (Nowicki & Duke, 2013). However, internally oriented individuals have been described as having a tendency towards self-regulation (Liverant & Scodel, 1960) and earlier studies that have used interventions that teach self-monitoring behaviours or the connection between behaviour and consequence have been successful in altering locus (Autry & Langenbach, 1985; Nowicki & Strickland, 1973). Therefore, *(NGO name removed for confidentiality)* was the ideal collaborator for this study, as I could mobilize their life-skill training framework as the remedial intervention. The remedial intervention life-skill training is provided in isolation and in combination with role model intervention, to facilitate the identification of most effective policy. The life-skill intervention aims at positively influencing children's beliefs about the efficacy of effort, thereby inducing internally oriented behaviour. The intervention exposes children to a module from the NGO's after-school academy syllabus called 'river-of-life'. It is a self -reflective module where through the session the instructor helps the participants reflect on their own life experiences and metaphorically compares life to river with

episodes of smooth water, sudden turns, rocks and boulders signifying good outcomes, bad outcomes and obstacles respectively. The role of the instructor is to help the children think by prompting questions and helping them to recognize how their own actions led to the good outcomes, focussing on surfacing the fact that the primary energy should be channelized towards taking control of outcomes in life by one's own choices or actions, even sustaining this behaviour even against odds. However, given the pre-disposal of one group to adversity priming, it is assumed that life-skill training alone might not be effective in altering *locus*. Therefore, a second type of remedial intervention is constructed that combines life-skill with role-model intervention. For the role-model part of the intervention, the instructor is assigned as someone who is from a similar marginalized background as the children in the study, has been a graduate of the NGO's life-skill program, has fought similar odds in life as the children and is now living a better life socio-economically.

The intervention material is derived from an original curriculum module at *(NGO name removed for confidentiality)* that has been designed in collaboration with Partners for Youth Empowerment (PYE Global) and Grassroots Soccer. The original module called 'river-of-life' helps the children reflect on their own life and take away learnings upon reflecting on the difficult and good times of life. We reframe the original module slightly to reorient the focus of reflection. The classroom activities highlights the role of believing in the merits of taking control of one's own life outcomes by helping the participants to reflect on incidents from their own life. The NGO's trainers who are well trained to deliver the life-skill program deliver the intervention. In addition, the trainers are encouraged to adopt a training philosophy that emphasizes the role of believing in the power of one's own actions rather than externalitie, the intervention is not just a material to be covered but the aim is to alter students' belief about the significance of taking control over their own life rather than leaving it in the hands of destiny. I evaluate the effect of this unique training program using six independent samples of 4^{th} -9^{th} grade students (age 9-17). I measure the outcomes through multi-faceted methodology that includes a novel real effort-chance task, and pre-post *locus of control* questionnaire. The real effort-chance task is carefully designed to elicit perseverance in effort when one is also given the choice of relying on destiny.

This chapter contributes to the emerging literature in behavioural economics that departs from the standard economic models and highlights the constraining role of behavioural

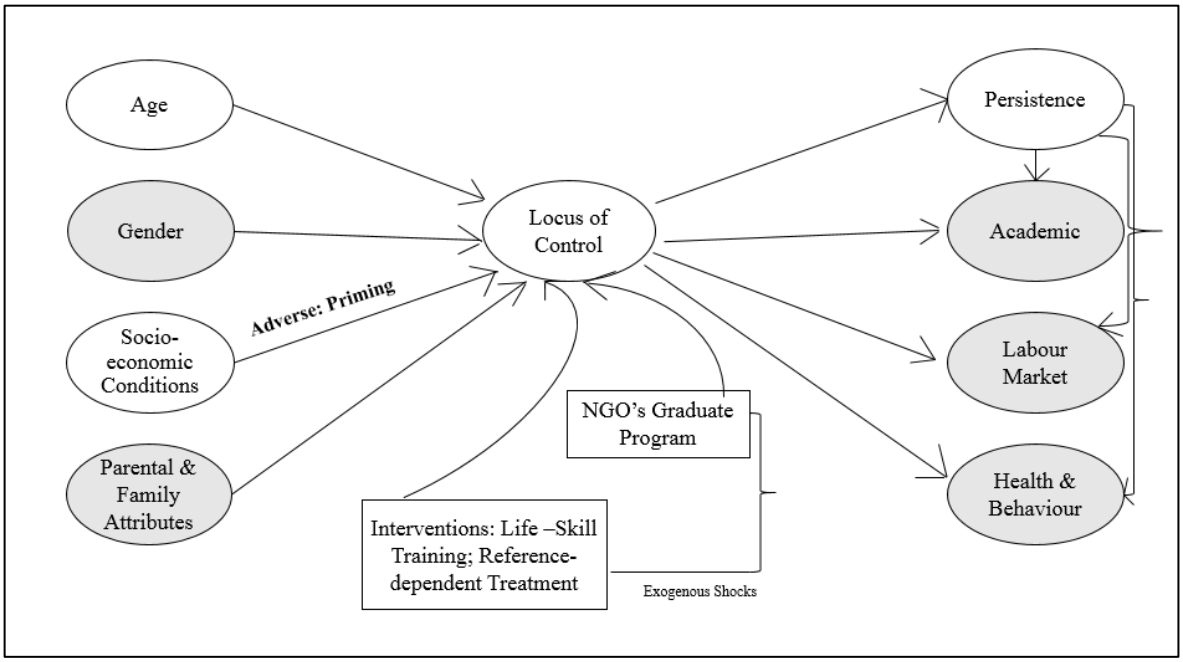
biases in the poverty literature (Ghosal, et al., 2013; Dalton, Ghosal, & Mani, 2016; Tanguy, Dercon, & Taffesse, 2014, Alan, Boneva, & Ertac, 2016). This study is novel in two ways. Firstly, I use priming to activate the experience of socioeconomic adversity implicitly, without having subjects consciously reflect on these concepts. Secondly, in lieu of relying on self-reported measures of perseverance, I use a real choice task that allows me to capture one's perseverance. Therefore, that allows me to obtain an honest indicator of perseverance rather than a biased self-reported one. The experiment is conducted in a strictly controlled setting with no real monetary consequences, integrated simply into their daily routine. The purpose of this study was to implicitly prime socioeconomic adversity stimulus and examine the effect on *perseverance*, ultimately, treat *locus of control* and test the potency of the remedial intervention in mitigating the effect of adversity on *perseverance*.

The chapter is organized as follows. Section 3.2 presents the hypothesis, Section 3.3 details on the design of the Treatment-Control groups, implementation of the interventions and on the measurement of the different outcome variables of interest. Section 3.4 contains details on the data, Section 3.5 discusses estimation methods, Section 3.6 presents a detailed discussion of the results, Section 3.7 concludes.

3.2 The Hypothesis

Chapter 2 findings suggest that locus of control tends to be external with age amongst marginalized children, whereas, such is not the case normally otherwise. In Chapter 2, children from middle-class background in India exhibited a positive developmental trend of locus (i.e. increasing sense of internal control) conforming to previous results in the field. Therefore, this chapter focuses on understanding whether or not being exposed to adverse socioeconomic stimuli affects one's locus of control. In addition, since locus predominantly moderates the amount of effort one expends, this study aims to capture the moderating role of locus on perseverance. I do this by creating socioeconomic variation through adversity priming and recording the impact on locus of control and perseverance. I only vary socioeconomic condition to its extremity, given all other antecedents remain constant within the timeframe of the study. Subsequently, I intervene locus of control with life-skill training and role-model intervention to encapsulate the effect on perseverance. Figure 3.1 presents a pictorial representation of the hypothesis.

Figure 3. 1: The Hypothesis



3.3 Evaluation Design

3.3.1. The Setting

The new data jointly released by The World Bank and UNICEF exposes the troubling reality: as of 2013 almost 385 million out of 767 million living in extreme poverty were children aged below 18. This is critical in the context of global efforts to end extreme poverty by 2030 because if these children are unable to break out of poverty, they will live in poverty. Children are disproportionately affected - they make up around one-third of the sample population but one-half of the extreme poor. This cannot be explained by a larger youth population as clearly in developing countries 19.5 percent of children are estimated to be extremely poor compared to 9.2 per cent adults, which make them twice as likely to be living on or less than $1.90 a day, the youngest being the worst off[22]. Children are worst affected across not just by extreme poverty but poverty widely. When the threshold is

[22] The youngest children are the worst off – over 20 per cent of all children below 5 in the developing world live in extremely poor households, compared with nearly 15 per cent of 15-17 year olds, The youngest children are the most at risk – with more than one-fifth of children under the age of five in the developing world living in extremely poor households.

extended to $3.10 day, children turn out to be far worse off with an estimate of 45 per cent living under moderate or extreme poverty compared to 27 per cent of adults. These numbers are concentrated in certain parts of the developing world, South Asia housing 36 per cent of the world's extremely poor children that is second highest to Sub-Saharan Africa[23], over 30 per cent living in India alone. These children are at risk of having inadequate education, healthcare and nutrition, are often exploited and abused, are deprived of basic human rights to safe drinking water, adequate sanitation and access to many other public services. However, the issue of child poverty concerns goes beyond just external constraints. The experience of socioeconomic adversities damage children's mental, physical, emotional and spiritual development because the environment they live in provide only little stimulation by constantly inhibiting their potential and discriminating them from participating in society, leading to their disempowerment. The location within the country also plays a role in deciding the type of poverty the children are suffering. Over a quarter of children living in rural areas, live in extremely poor households compared to just over nine per cent of children in urban areas. However, living in urban proximities or thriving moderate poverty only does not act in any way to their benefit because the cost of living in a city is much higher than rural areas. On the contrary, the urban poor children are more prone to discrimination, stigmatization and exclusion because they are directly exposed to the other extreme of the society, to an extent that they shy away from accessing public places like supermarkets and shopping malls, though merely visiting them does not involve any cost. Therefore, the environment is not very conducive for holistic development of the children, often leaving them behaviourally unequipped to deal with the challenges of life. This study is conducted with children who belong to the urban poor population of the city of Bangalore in India. Bangalore like many other cities has a disproportionate concentration of poverty, the clusters that could be demarcated from rest of the city by its startlingly poor conditions of housing, overcrowded homes, lack of appropriate sanitation or water supply. Though the people living in these areas might not be living below the poverty line by a sizeable amount and might be able to afford the food basket for themselves, they still live under poor quality of life, which make these children vulnerable and susceptible to cognitive and non-cognitive damages.

[23] Sub-Saharan Africa has both the highest rates of children living in extreme poverty at just under 49 per cent, and the largest share of the world's extremely poor children, at just over 51 per cent. Since countries without data are not included in this, the real share could be even higher.

This study is conducted in collaboration with the Non-governmental organization called *(NGO name removed for confidentiality)* that was started in 1999 with the purpose of "…empowering young people from vulnerable backgrounds to overcome adversity and flourish in a fast-changing world using a creative life skills approach". They engage with over 10,000 young people directly every year and have 40 partner schools that work in their collaboration. Their life skill training provide these children from socioeconomically vulnerable backgrounds tools to deal with the adversities of life. A life-skill session typically lasts for an hour and half and takes place daily after school hours, where the facilitators engage students in various activities through the medium of either sport or art, to equip them with life-skills that would help in dealing with the adversities and come out successful even at the face of odds. The facilitators take the participants through these pre-designed modules with an added element of role-model effect from their own life, as most of the facilitators are graduates of the NGO's after school program, who fought odds and have successfully established their careers. This programme has been playing a critical role in empowering children from urban poor clusters in Bangalore and they have been able to intervene almost 100,000 lives up until now. The study that I develop and evaluate aims at exploiting the *(NGO name removed for confidentiality)* after school life-skill setting to understand the efficacy of such an intervention in mitigating the exposure to adverse socioeconomic stimuli. The organization's in-house facilitators implement the program designed for this study. For the purpose of this study, the setting of the life-skill program is left unaltered. However, the treatment-control groups are designed specifically to achieve the objectives, by using the format of the after school training program of the NGO. This study is conducted with students from *(School name removed for confidentiality)* (Bangalore) and the participants are aged between 9 and 17. This age group was the target age group to study the impact of being exposed to socioeconomic adversities on *locus* and *perseverance* as locus of control shapes in the most impressionable years.

3.3.2. Treatment-Control Design

There are two stages of the evaluation. The first stage exposes one group to adverse socioeconomic stimuli through priming vis-à-vis the control group that is primed neutrally. In the second stage, participants undergo three different categories of remedial interventions randomized within each priming group. Therefore, in total there are six combinations of the priming-remedial interaction as shown in Table 3.1. The participants

are stratified according to their grades, a unique identifier is assigned to each participant and the identifiers are randomized into six groups through stratified random sampling. The method of stratification is guided by the grade effect[24] observed in the baseline non-cognitive skills that are routinely collected and maintained by the NGO at the beginning and end of each session. On the day of the program, the allocation chart generated through randomization decided the priming-remedial groups for the participant. The adversity primed group, referred hereafter as APM (adversity_primed) is primed with attributes of socioeconomic adversity that is designed to invoke a sense of powerlessness and the control group referred hereafter as NPM(neutral_primed) is primed neutrally. Post priming, the participants immediately follow to their designated group of remedial interventions (RTG0, RTG1 and RTG2), without any prior knowledge of how each group may differ from the other. They were not made aware that the intervention differs from group to group, as being divided up into groups for activities is the regular norm in after school training hours. The remedial intervention is provided through the medium of art. The first group (RTG0) receives a placebo art class and that helps in analysing the effectiveness of the priming session (APM0 vs. NPM0). The remaining two groups (RTG1 & RTG2) receives remedial intervention both aimed at treating *locus of control* but in two varied intensities. The second group (RTG1) receives Type I remedial intervention that is life-skill training session devoid of any role-model element. It aims at educating the children about the novelty of taking control of the direction in which outcomes in one's life goes. Whereas, the third group (RTG2) undergoes Type II remedial intervention that combines life-skill training with role-model intervention. A role model effect is added by facilitating this intervention by a trainer who is an ex-graduate of the NGO's program and has witnessed result of taking control of life outcomes by being persistent against odds. A comparison within each remedial intervention group (APM1 vs. NPM1 and APM2 vs. NPM2) scopes the analysis of stand-alone potency of each remedial intervention in mitigating the impact of adversity. Since priming effect projected by APM2 is a collective effect of life-skill and reference-dependent components, an inter-group comparison (APM1 vs. APM2) can separate the impacts. However, AMP2 also allows the evaluation of complementarity of the two different types of remedial interventions (Type I and Type II). Further, NPM0 is the pure control in this design and a pre-post analysis could determine any Hawthorne effect from participation.

[24] Refer to Appendix B.1 for Baseline results

Table 3. 1: Treatment-Control Assignment

	Remedial Intervention		
	RTG0 - Placebo Art Class	RTG1 - Life-Skill Training	RTG2 - Role Model + Life Skill Training
Adversity Priming (APM)	APM0 = 28 (adversity_primed_placebo)	APM1 = 45 (adversity_primed_ls)	APM2 = 45 (adversity_primed_ls_rm)
Neutral Priming (NPM)	NPM0 = 28 (neutral_primed_placebo)	NPM1 = 45 (neutral_primed_ls)	NPM2 = 45 (neutral_primed_ls_rm)

3.3.3. Intervention Design

The intervention is designed in two stages. The first stage comprises of the priming exercise and the second stage uses an educational intervention as the remedial treatment.

i. Priming

Priming, the method of incidentally or unobtrusively activating social knowledge to influence what comes next without the person's awareness of this influence has been ubiquitous in the social psychological literature for 35 years. The concept of priming took birth from the interest of social psychologists in understanding subtle and unanticipated effects of people's social environments on their thoughts and behaviours. Within the realms of social psychology priming is defined as the process in which the present circumstances influence the activation of stored knowledge and corresponding responses (Higgins, 1996; Higgins & Eitam, 2014). The method of priming works by affecting the non-conscious form of human memory, where the individual is unaware that familiar visuals or words are triggering his own emotions related to the same. The initial priming exercises focussed on understanding the method in which passive activation of traits through verbal tasks influenced consequent judgements. For example, exposing experimental participants to words related to 'kindness' as part of a purported 'language study' caused them to subsequently view a target person as more kind, compared to the impressions formed of the target by a control group (Srull & Wyer, 1979). Earlier priming results have shown that people tend to utilize activated social knowledge in their subsequent judgements and behaviours even when the activation arises from unrelated or

irrelevant sources. Bargh et. al (1996) in an experiment showed how volunteers walked slower when primed with words related to old age, Dijksterhuis and Knippenberg (1998) showed that students fared better in general-knowledge tests after primed with words related to attributes of professors. Priming has also been used to study the behavioural effects of activating representations of specific social contexts, such as feeling included versus excluded (Molden, Lucas, Gardner, Dean, & Knowles, 2009) or on pursuing growth versus maintaining security (Molden & Finkel, 2010). Therefore, historically priming effects in social psychology has encompassed diverse set of phenomenon, however the boundaries are still being explored.

In this study the aim is to prime one group (adversity_primed) with attributes of socioeconomic adversities. Given these children have suffered ramifications of adverse socioeconomic conditions from birth, both at home and in the neighbourhood, they are expected to possess stored knowledge of life under such distressed environment. However, at the point of time when the study was being conducted, each child had been under the NGO's life-skill intervention for at least three years or more. Therefore, their coping mechanism could have most justifiably developed over time motivating the way they evaluate situations, make choices or act. It is anticipated that the adversity priming would act as a stimulator and activate their stored knowledge of life situations under socioeconomic adversity that would then influence their subsequent evaluations, judgements or actions occurring either outside their (a) awareness of this potential influence or (b) intention to utilize the activated representations during judgment or action (Loersch & Payne, 2011; 2014). That is, the effects of the prime are presumed to arise because they either do not recognize its potential effects on their subsequent responses or, even if they do, still do not intend to utilize the primed representations when making these responses. The other group that acts as a control is primed neutrally.

The entire priming session is scheduled for a total of 45 minutes and it is designed to comprise two consecutive activities with the intend to intensify the effect, as induced emotions need to be continuously sustained (Haushofer & Fehr, 2014). The first priming activity introduces the children to the story[25] reading time. The adversity_priming (APM) group is introduced to the story of Mita, a child from a socioeconomically disadvantaged background. The story has elements from a life of a typical marginalized household and therefore expected to resonate with the participants awaking their own memory of

[25] Refer Appendix B.6 A & B

struggles. The control group (neutral_primed) also goes through the story reading activity but a passage on India, that has no elements of socioeconomic adversity involved. Both the stories are given as handouts by the instructors to the participants and they are given 10 minutes to go through the same. The timing provided to go through the story is kept very short so that the short exposure to stimuli only involves implicit memory.

This is followed by the demonstration for the second priming activity which is based on the seminal series of experiments by Bargh Chen and Burrows (1996) that involves asking participants to indicate the word that is odd one out amongst an ensemble of scrambled words, a number of which when rearranged, formed a sentence[26]. The instructor wrote the jumbled words on the boards including the odd word (Refer Appendix B.7 A). Then asked the students to form a sentence and spot the odd word. Unbeknownst to the participants of adversity_primed (APM) group, the word left out of the sentence is systematically related to the concept of ‘‘socioeconomic adversity’’. Whereas, for the neutral_primed group the odd word is random and has no specific patter or motive related to socioeconomic adversity. The beauty of the experiment lies in its unusual dependent measure: the task measuring *perseverance* and *locus of control*. For logistical reasons, the priming is required to last for at least two hours to scope time for remedial intervention immediately after and the end line study. Usually priming effects can disappear within 2 hours if it is just one or two exposure to words or can even last up to 24 hours or longer. However, the method of priming adopted here closely resembles repetition priming where one initial exposure to the stimuli is followed up by tasks that do not require explicit memory and this effect is expected to last for more than 24 hours. The adverse socioeconomic priming for the adversity_primed group is not considered harmful or unethical in any way here since the effect is very short-term, expected to last between 2-12 hours only when the participants might resonate with their own experiences of marginalization and that may effect the way they behave or make choices (e.g. tasks that followed in this study after priming).

ii. Remedial Educational Intervention: Life-skill Training

The purpose of the remedial intervention is to effectively mitigate the impact of adversity that might be invoked by priming in stage one. For determining the most effective intervention, the remedial intervention is provided in three groups. The first group RTG0

[26] Refer Appendix B.7 A & B

receives placebo treatment, the second group RTG1 receives life-skill remedial intervention only and the final group RTG2 receives a combination of life-skill and role model intervention. Within each remedial group (RTG0, RTG1 and RTG2), the adversity_primed (APM) and neutral_primed (NPM) undergo the same intervention. The medium of training used is art. The placebo group (RTG0) takes up an art class where they are instructed to draw a piece as they wish using colour pencils, crayons, pencil, etc.

Perseverance is motivated by one's belief in the merits of effort, therefore the search is for a remedial intervention that can treat *locus of control* effectively. There has been much contradicting views on whether *locus of control* is a malleable aspect of personality. In an experiment where 10-, 11-, and 12-year old boys were taught self-monitoring behaviours along with a combination of external-regulating procedures improved locus of control significantly (Autry & Langenbach, 1985). A similar intervention used in a summer camp that focussed on teaching about the connection between behaviour and consequences showed significant results in improving locus of control too (Nowicki & Strickland, 1973). Earlier, life-skill training has also been significantly effective in mitigating addiction issues in adolescents (Botvin & Griffin, 2004), as a preventive strategy for HIV/AIDS (Visser, 2005) and in improving social adjustment problems in children (Spivack & Shure, 1974). Therefore, though the efficacy of interventions in altering *locus of control* have produced conflicting results (Nowicki & Duke, 2013), well-designed interventions have been successful in altering locus at least over short term. I use life-skill training as the remedial intervention to treat *locus of control* as this program teaches effective self-regulating behaviours (Spence, 2003). Self-regulation is a mix of social and emotional capabilities that equip one with tools to deal with challenges in life, participate in goal-oriented behaviour, to sustain effort in the absence of immediate reward, to voluntarily focus or shift attention from the negative influences in life, and eventually helps one to successfully navigate through the struggles of life.

The life-skill training module I use here is called 'river-of-life'[27]. However, the module we use as shown in Appendix B.8 is an adaptation from the original module. It is a deeply self-reflective module scheduled for 45 minutes. The session is delivered by an instructor from the NGO who is well-versed with the module and delivers the same on a daily basis during the NGO's after school training hours conducted in partner schools. In this module the river is symbolic of one's own life where there are smooth water phases that are

[27] Refer Appendix B.8 for activity module

associated with good outcomes or happy incidents of life, the sudden twists and turns that are associated with bad outcomes that lead to change in direction of one's life and then there are boulders and rocks that are synonymous to obstacles or external constraints of life. Each topic is introduced by the facilitator with the help of a kit that provides specific guidelines for implementing activities[28]. The intervention uses self-reflection as a tool to bring forth the fact that the good outcomes have happened because of our own choices or actions and therefore, the taking control over the direction in which the river of our flows may also help us combat the bad outcomes or turn around the bad outcomes. Yes, there are going to be rocks and boulders that give bring about bends and twists in our life that we do not want or expect, however, if we always decide to persistently channelize our primary energy towards our actions, the river will take the best shape possible. However, the main message that the instructor helps the participants reflect upon is in the process of realization of how it may be if they were to take control or charge of outcomes in their own life. A typical life-skill module is not just an educational intervention, but also rather an attempt to change the mindset of the children and their perspective on the merits of taking control over one's own life.

Remedial intervention provided to the group RTG1 is life-skill training alone. RTG2 receives a combination of life-skill training paired with role-model intervention to break excess belief in externalities. A graduate of the NGO's after-school life-skill training program, who struggled with socioeconomic adversity himself in his early years and has overcome similar challenges to be successful in life, facilitates the session for RTG2. The facilitator provides references from his own life experiences and shares his journey of combating socioeconomic adversities and how he took control of his life against odds. He shares the example of how he focussed on using his skill of art against all odds to be an art teacher today, given that he had to take care of a family of 6 members and how he stayed focussed on his choices to be in control of the life he lives today. The facilitator's role is designed to have a role model impact that has been proven effective in reshaping beliefs and choices earlier.

[28] Appendix B.8 highlights the exact instructions that were followed by the instructor. Each question prompted and how the instructor assists the participants with self-reflection.

3.3.4. The Experimental Task and Outcome Variables

The data collection[29] strategy for testing whether the remedial educational intervention is able to mitigate the impact of adversity is composed of two visits to the after-school hours, two weeks apart. The set of tasks we implement aims to measure (1) *locus of Control*, through a questionnaire and the real effort-chance task (2) *perseverance*, through the real effort-chance task. In the first visit, children are told that they will play a game and at the end of the game medals will be distributed for the first three winners. They are also informed that the prize is not in monetary terms, they will receive the gifts at the end of the day and we would revisit them in one of their after-school hours to play other games. After this introduction, we first elicit their locus of control through a questionnaire and we then conduct the real effort-chance task to elicit observed locus of control and perseverance. In the second visit, we first implement the priming session followed immediately by the educational interventions according to their randomly allocated group as indicated in Table 3.1. This is then followed up by the real effort-chance task. Because of the differential priming treatments received by the children, within each remedial intervention groups (RTG0, RTG1, and RTG2), children are expected to have different locus of control at the beginning of the real effort-chance task in the second visit. We complete the second visit with follow-up locus of control questionnaire, which, as we explain below includes a battery of questions aiming to elicit children's beliefs. I now give a detailed account of the elicitation methods.

i. Elicitation of Belief: Locus of Control Scale

Rotter (1966) defined locus of control as ''the degree to which the individual perceives that [a] reward follows from, or is contingent upon, his own behaviour or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions'' (p. 1). Therefore, theoretically in its forms of extremity, an individual with internal locus of control believes that reinforcements are determined by effort whereas an individual with external locus of control believes more in the merits of fate, luck or external forces in determining outcomes. The most commonly used measures of internality-externality in psychological literature has been Rotter's (1966) 29-item Internal-External (I-E) Scale and Nowicki and Strickland's (1973) 40-item scale for children. Though the Children's Nowicki-Strickland Internal-External Control Scale

[29] Refer appendix B.4 for timeline of field experiment

(CNSIE) was created for children between 9 and 18, I could not afford to use it in this thesis due to time constraints. Therefore, the obvious alternative was to turn to Rotter's (1966) I-E Scale. The I-E Scale has been used widely and by diverse populations like Black civil rights activists (Strickland B. R., 1965), adolescents (Klingman, Goldstein, & Lerner, 1991), women going through divorce (Morgan, 1988), therapy clients (Foon, 1986; Harper, Oei, Mendalgio, & Evans, 1990) and Bosnian refugees living in Norway (Van Selm, Sam, & Van Oudenhoven, 1997). The adaptability of I-E Scale is evident in not only the scales' use with differing populations but also with differing forms both in terms of number of items and scale of the item (e.g. John, Gentry, Tansuhaj, Manzer, and Cho (1988) translated I-E Scale into 6-item Thai version with a 5-point Likert type scale).

The I-E Scale has been sparingly validated amongst the Indians living in India (Khanna & Khanna, 1979; Parsons & Schneider, 1974; Carment, 1974). However, it has not been utilized so far in understanding the locus of control differences between marginalized and non-marginalized children in India. Further, if one does aim to study locus amongst children, most likely one would turn to the 40-item CNSIE (Nowicki & Strickland, 1973). Given the time constraints, the aim here is to come up with a scale that measures the general sense of control amongst the children in this study, for which Rotter's (1966) I-E Scale fits the need adequately. The I-E scale is not unidimensional (Hersch & Scheibe, 1967; Mirels, 1970; Reid & Ware, 1973). Largely there are three dimensions – (a) systems control (b) personal control and (c) general control ideology (Carment, 1974). I choose the items under "general control ideology" based on classifications suggested by studies in psychology (Parsons & Schneider, 1974).

The 29-item scale with dichotomous response categories is adapted to a 5-item Likert type scale for the purpose of this thesis. The wording is changed to make it more appropriate and relatable for the target population. Taking into consideration the socioeconomic context of the participants, Q2 and Q3 on the questionnaire is situation based (a hypothetical situation). Nevertheless, integrity is adhered to the theme of the original question on the I-E Scale. The questions are formulated in a third person character named Hari to minimize self-reporting biases, as children could feel conscious to give honest opinion when addressed in first person. I list below the questions along with the original item on Rotter's (1966) I-E Scale:

1. If Hari succeeds in life, would it be because of his own effort or will it be a matter of luck? (10 point scale)

(b) Reference item 11a – Becoming a success is a matter of hard work, luck has little or nothing to do with it (Rotter, 1966)

2. Hari works as a gardener in the house of a school teacher. When he got to know about Hari's love for books, he offered to teach Hari in the evening every day. However, for that Hari needs to finish work and then take out 2 hours every day in the evening and walk 2 Km to go to his house. What would you do if you were Hari?

(b) Reference item 11a – Becoming a success is a matter of hard work, luck has little or nothing to do with it (Rotter, 1966). Given this item forms the underlining theme of Q2, the motive is to check whether one believes hard work against odds could lead to success.

3. Hari plans to send his sisters to school and not let them work or get them married off soon. What would you do if you were Hari?

(d) Reference item 25a - Many times I feel that I have little influence over the things that can happen to me (Rotter, 1966). The aim of Q3 was to see given a choice to influence future outcome, what choices one makes.

(e) Reference item 9b- Trusting to fate has never turned out as well for me as making a decision to take a definite course of action (Rotter, 1966).

(f) Reference item 28 (CNSIE) - Most of the time, do you feel that you can change what might happen tomorrow by what you do today? (Nowicki & Strickland, 1973)

4. Do you think that Hari has control over the direction his life will take?

(b) Reference item 28b - Sometimes I feel that I don't have enough control over the direction my life is taking (Rotter, 1966).

5. Do you really believe that any child, who faces difficulties in life like Hari, can be whatever he/ she wants to be?

(c) Reference item 28a- what happens to me is my own doing (Rotter, 1966).

(d) Reference item 2f – Do you really believe a kid can be whatever he wants to be? (Bialer, 1961).

Each question has ordered options and the option selected determines the score for that answer. Consequently, the individual scores on all the five questions are added up to determine the total score on a 26-point scale that is used as the desired outcome variable in this study. I combine the five questions to form a scale because combining is more reliable and precise, and reduces measurement error (Spector, 1992). The same locus of control questionnaire is also used in the study presented in Chapter 3 for comparable reasons. Though Rotter's (1966) I-E Scale has been validated earlier for children, the derived scale that we use in this has not. Therefore, the first step was to validate the scale with the NGO I collaborated with. The scale went through many stages of development, as the NGO trainers who interact with the children on a daily basis and are well-versed with their abilities were involved at each stage. The scale was finalized after we reached a point when we jointly reached a conclusion the scale should be well understood by the children. This was also validated through informal trials of the questionnaire that was conducted by the trainers during their routine after-school training sessions. Therefore, it was considered that the children would not face trouble understanding the questionnaire. In Chapter 2 Section 2.3.2 I also show results from reliability and dimensionality tests.

ii. Elicitation of Perseverance - The real Effort Task

The real effort-luck task is designed to experimentally evaluate the efficacy of the educational intervention in mitigating the impact of adversity on one's attitude to be persevere effort. Despite its possible significant implications on economic choices, perseverance has sparingly been discussed in the context of socioeconomic transformation, and one reason behind that being measurement issues. There are many different approaches to measure perseverance, but the two most significant factors that are common between all the different measures of perseverance are keeping at a task despite repeated failures and withstanding discomfort to achieve a goal (Thornton, 1939). However, under conditions of adversity the logical alternative to perseverance is one's tendency to rely on happenstance or destiny. Therefore, the aim of this experimental task is not only to capture how long one tends to persist at effort but perseverance[30] when one is also offered the alternative to rely on chance and escape effort. One's evaluation here is expected to be guided by one's locus of control, which is also revealed through one's choice.

[30] I use the terms *persistent effort* and *perseverance* indistinguishably throughout the thesis

Experimental or natural, in any situation the expectancies for various behaviour-reinforcement sequence results from an individual's interpretation of the cues of the situation (Phares, 1957). Most of the experimental studies in psychology that measure locus explore the shift in this expectancy. Nevertheless, the aim of this study is to enumerate *perseverance*, whether one perseveres effort or continues to depend on luck, given the knowhow of whether it is a effort task or chance task.

It has been observed earlier by researchers that a person's verbal expectancy about the future reinforcements is dependent on whether one perceives the situation or task at hand as skill or chance dependent. Particularly in a skill task, the individual believes that he has control over the outcomes whereas in case of a chance task he believes the reinforcements are dependent on factors outside his locus of control. In each of these studies when the participants were well informed about which is a skill task and which chance, it was observed that increment or decrement in expectancy following a successful or failure trials consecutively was greater in case of a skill task than chance. In this study, the task captures one's expectancies through one's perseverance with real effort and chance. This is done by designing an 'Effort versus Chance' game based on the 'Skill versus Chance' structure of Rotter et. al (1961). The game comprises of two tasks, one that would only require one's effort and the other completely dependent on chance. The participants are told that they would be playing those games as part of a competition and they are made aware of which task depends on their effort and which one on chance. They are also told that they would not be judged based on their choice of game but on the total score they achieve on both. They could choose either game or a combination of both to maximize their score. Each game has multiple levels designed to have increasing difficulty and no short term or interim rewards are offered for crossing each level. For the real effort task they are presented with a grid that contains a combination of black and blue digits and the target is to count the number of coloured digits embedded amongst the black digits, within a stipulated time. Hence every level is time bounded. This task does not require any task specific ability. With increasing level and difficulty, the combination of timing and number of digits to be counted is made more difficult to achieve. For the chance task one has to roll a certain number of dice together and obtain the same number on all the die. With each level, one extra dice is added to the challenge. The effort-chance task is novel because it allows us to capture the actual perseverance one exhibits rather than self-reported values.

Scoring is done based on the number of trials one takes in each level, as the main objective is to account for perseverance. If one fails to achieve at one trial, one is given an option to take another trial as many times as one would wish to. Before each round starts, the experimenters offer the students the chance to choose to between (1) continue with another trial if they have failed the last or move to the next level if they have succeeded in the current level (2) switch to the other game (3) quit. This opportunity is given to students to switch back and forth between two types of tasks so that they could work on the task of their choice, revealing their preference between perseverance and chance. Extinction is considered when one no longer wants to pursue trials in either of the tasks. The scoring pattern is listed in Table 3.2. The scoring pattern takes into account both trials within levels and conviction to persevere with increasing difficulty of levels. However, if one fails within a particular level and still persists at it until success is achieved, that too needs to be accounted for. To account for perseverance (effort or luck) within each level and with increasing level, the total score has been calculated by multiplying the number of trials in each level with the level itself. The total score is converted into *perseverance z-score* using the baseline mean and standard deviation to get the outcome measure for *perseverance*. The hypothesis is if one believes in the merits of effort in controlling outcomes, one would choose to maximize the score by persevering in the effort task and if otherwise, then they would persevere to rely on chance task. Therefore, the number of trials one attempts in each task in effect depicts one's perseverance either at effort or at chance to maximize the score. Also, if one believes in the merits of one' effort in controlling outcomes, one would choose to maximize the score through the effort task and if otherwise, then chance task. Therefore, the number of trials one attempts in the effort task relative to the chance task reflects one's attitude to take control of outcomes, depicted by θ,

$$\theta = \frac{\text{Number of Trials in Effort Game}}{\text{Total Number of Trials(Effort + Luck)}}$$

Table 3. 2: Real Effort-Luck Task Scoring Pattern

Persistence at Effort / Luck					
Level	1	2	3	4	……
Trials	W	X	Y	Z	
Score	Score 1 = 1* W	Score 2 = 2*X	Score 3 = 3 * Y	Score 4 = 4 * Z	
Total Score = Score 1+ Score 2 + Score 3+ Score 4+ ……					

3.4. Data

The baseline analysis is done a week prior to starting of the program to measure the outcome variables of interest and constituted of 242 students from *(School name removed for confidentiality)* between grade IV and grade IX, who were enrolled onto the after school graduate program of *(NGO name removed for confidentiality)* for academic year 2015-2016. Ideally it would be perfect to conduct a study spanning from elementary to high school. However, earlier researches have reported trouble amongst elementary children in participating in such studies and hence included students only from third grade and above (Crandall, Katkovsky, & Crandall, 1965). Any student not being enrolled on the NGO's program is entirely due to logistical reasons, hence allaying the possibility of self-selection. Out of these 242, 6 students dropped out from baseline to end line, leading to a final sample size of 236. To minimize the possibility of attrition, a reminder was provided on the previous day. However, the attrition observed would have been purely coincidental due to health or any other unfavourable reasons rather than any endogenous issue related with the treatment. Since the sub-sample is chosen randomly there should not be any attrition bias. Allocation of samples to the 6 different treatment-control groups depicted by Table 3.1 is done by stratified random sampling, where each grade comprises a stratum. The method of stratification is guided by the significant grade effect observed in the baseline life-skill characteristics of the participants. To collect information about the participant's household and socio-economic attributes a household survey is conducted with the mother of each participant. As expected, given the randomized design, Table 3.3 shows the coefficients from regressing the individual and household characteristics on the treatment dummies. Panel A shows that individual characteristics like age, gender, starting age for schooling, religion, travel time to school and ambition are all statistically indistinguishable across the treatment groups and the comparison groups. Panel B reassures that the pre-existing differences in the household level data are mostly insignificant as well, with low point estimates. Also, to minimize the potential bias caused by differential attrition between the treatment and the control group, I measured the outcome variables at the baseline for all the originally sampled participants of the program. There seems to be no significant difference between the treatment and the control group as summarised by Table 3.4, validating the randomized setting of the experimental design.

Table 3.5 presents the summary statistics of the background data of the participants. 85% have a basic standard of living. The standard of living score is calculated based on whether

the family had access to bathroom, had supply of water and electricity and had a separate kitchen (Schoon, et al., 2002). However, the occupancy rate is quite high which indicates overcrowding. 83% of the sample belongs to the same neighbouring location which is within less than 15 minutes of travel time from the school by walk. Therefore, the social culture in which the participants have grown up could safely be expected to be very similar. The religious background of the families is also largely homogeneous as 92% are practicing Hinduism. This is significant in the context of India because a lot of culture and values are defined by one's religious practice. Parents are majorly educated only until school level, with a sizeable proportion of parents who have never attended school, 66% of the mothers are employed in mostly unskilled labour market jobs like tailoring, housemaid, etc. and the fathers are mostly employed in unskilled labour market too working as drivers, or daily wage labourers, factory workers, etc. The homogeneity of the social context is instrumental in this study because the social context plays a key role in shaping the variables of interest. The household and economic background of the participants are rather comparable.

Table 3. 3: Experimental Validity

	Dependent Variables												
	Panel A: Individual Level						Panel B: Household Level						
	Age (Yr.)	Male (%)	School Starting Age (Yr.)	Hindu (%)	Travel time to school (< 15 minutes)	Has an Ambition (%)	Mother has primary education (%)	Father has primary education (%)	Mother Employed (%)	Family Income <1.9$ (%)	SOL (%)	Family Size (%)	Property Ownership (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
APM1 (Adversity Priming + Life Skill Training)	0.05	-0.07	-0.33	0.13	0.09	0.10	0.04	0.11	-0.11	0.02	0.01	-0.37	0.08
	(0.47)	(0.12)	(0.22)	(0.09)	(0.09)	(0.12)	(0.10)	(0.11)	(0.12)	(0.12)	(0.09)	(0.43)	(0.09)
APM2 (Adversity Priming + Role-Model + Life-skill)	0.15	-0.002	0.11	0.07	-0.04	0.02	-0.07	-0.15	-0.003	0.04	0.06	0.03	-0.03
	(0.47)	(0.13)	(0.32)	(0.09)	(0.09)	(0.12)	(0.09)	(0.12)	(0.10)	(0.11)	(0.09)	(0.49)	(0.09)
NPM0 (Neutral Priming + Placebo)	-0.15	0.04	-0.13	0.11	9.35	0.07	-0.04	0.07	-0.07	0.07	0.07	-0.39	0.07
	(0.45)	(0.14)	(0.24)	(0.09)	(0.10)	(0.13)	(0.11)	(0.12)	(0.13)	(0.13)	(0.09)	(0.44)	(0.09)
NPM1 (Neutral Priming +Life-skill)	0.09	-0.07	-0.62	0.05	0.02	0.02	-0.05	0.07	-0.05	0.04	0.06	-0.24	0.06
	(0.46)	(0.12)	(0.22)**	(0.09)	(0.09)	(0.12)	(0.10)	(0.12)	(0.11)	(0.12)	(0.09)	(0.46)	(0.09)
NPM2 (Neutral Priming + Role-Model + Life-skill)	0.1	-0.09	-0.23	0.18	0.00	0.08	-0.008	0.002	-0.09	-0.11	0.13	-0.46	0.13
	(0.43)	(0.12)	(0.22)	(0.08)*	(0.08)	(0.12)	(0.10)	(0.12)	(0.11)	(0.12)	(0.09)	(0.42)	(0.08)
Constant	11.89	0.54	4.25	0.82	0.82	0.61	0.79	0.64	0.71	0.54	0.79	4.75	0.78
Observations	236	236	236	236	236	236	236	236	236	236	236	236	236
F-stat (Joint Significance)	0.13	0.44	2.86		0.71	0.32	0.41	1.70	0.39	0.74	0.74	0.84	1.14

Notes: This table represents OLS results from regressing baseline individual and their household characteristics on different treatment group dummies
Omitted Category: APM0 (Adversity Priming + Placebo Remedial Treatment)
Columns 1-6 : Individual level data and robust standard errors in bracket; Columns 7-13 : Household level data of the individuals clustered at household level *significant at 5% ; **significant at1%

Table 3. 4: Baseline Difference in Outcome between Treatment-Control

	Control	Treatment
Locus Raw Score	15.331	15.559
	(0.295)	(0.292)
Locus *z-score*	-0.036	0.036
	(0.093)	(0.092)
No of Level _Effort	1.831	1.805
	(0.066)	(0.058)
Effort Raw Score	7.593	7.432
	(0.398)	(0.369)
Effort *z-score*	0.019	-0.019
	(0.096)	(0.089)
No of Level_Chance	1.924	1.847
	(0.045)	(0.043)
Chance Raw Score	35.441	32.864
	(1.574)	(1.535)
Chance *z-score*	0.076	-0.076
	(0.093)	(0.091)
θ	0.218	0.222
	(0.016)	(0.016)
N	121	121

Table 3. 5: Descriptive Statistics, Individual and Household

	N	Mean	SD
Panel A: Individual Variables			
Age	236	11.95	1.83
Gender (Male =1)	236	0.50	0.50
School Join_Age (Yr)	236	4.03	1.10
Sibling	236	1.22	0.64
Religion (%)			
Hindu	236	0.92	0.28
Muslim	236	0.03	0.18
Christian	236	0.04	0.20
Travel Time to School (%)			
< 15 mins	236	0.83	0.37
15 - 30 mins	236	0.14	0.34
30 - 45 mins	236	0.03	0.16
> 45 mins	236	0.00	0.07
NGO Membership			
Year1	236	0.23	0.42
Year2	236	0.21	0.41
Year3	236	0.25	0.43
Year4	236	0.31	0.46
Behavioural			
Career_Definite	236	0.66	0.48
Career_Indefinite	236	0.24	0.43
Career_DK	236	0.11	0.31
Hobby_Yes	236	0.82	0.38
Hobby_No	236	0.09	0.29
Total_Productive(Hr/wk)	236	18.39	4.16
Panel B: Parental Variables			
Mother's Education (%)			
Never been to school	236	0.16	0.36
School Level	236	0.76	0.43
College Level	236	0.05	0.22
University Level	236	0.01	0.09
Mother's Employment (%)			
Employed	236	0.66	0.48
Unemployed	236	0.34	0.48
Father's Education (%)			
Never been to school	236	0.22	0.42
School Level	236	0.66	0.48
College Level	236	0.08	0.27
University Level	236	0.02	0.14
Panel C:Household Variables			
Tenure Rented (%)	236	0.84	0.36
Occupancy Rate	236	4.28	0.96
SOLBasic	236	0.85	0.36
Family Size	236	4.52	1.37

3.5. Estimation

I do an intention-to-treat (ITT) analysis in this case. To evaluate the impact of the priming session and the remedial intervention on the outcome variables of interest, I estimate the following regression specification:

$$Y_{ijg} = \alpha_g + \beta T_j + \varepsilon_{ijg} \qquad (1)$$

where Y_{ihg} indicates the outcome variable of interest for the individual *i* assigned to treatment group *j* and studying in grade *g*. T_j is the binary variable which is equal to 1 if the individual belongs to the treatment group (the group that is primed with the elements of socioeconomic adversities). The coefficient β captures the average difference in outcome variable when one belongs to the treatment group relative to the control group. α_g denotes the grade fixed effects since randomization is stratified by grades and this would only improve efficiency (Bruhn & McKenzie, 2009). I also estimate the program impact by using the difference-in-difference strategy using the below specification:

$$Y_{ijgt} = \alpha_g + \beta T_j + \gamma Post_t + \delta T_j * Post_t + \varepsilon_{ijg} \qquad (2)$$

In this case, the program effect δ identifies the changes in individual outcomes in the treatment group before and after the program, in comparison to the changes in the control group before and after. This mitigates the potency of any time-variant or time-invariant factors to affect the results that may have otherwise influenced the results. $Post_t$ is a binary variable that denotes the end line. One of the key concerns regarding the validity of the findings could be any contamination between the treatment and control group. To keep the same in check the environment during the training program is kept in check to not allow any interaction amongst candidates. It is only the trainers that the participants are directly allowed to interact with and not amongst each other. In addition, standard errors have been clustered at household level throughout to account for any correlation in outcomes that might exist amongst children belonging to the same household due to genetic or household specific factors.

3.6. Results

3.6.1. Priming Effect

The group APM (adversity_primed) is primed with elements of socioeconomic adversity to capture the impact of same on the outcome variables of interest. The group RTG0 has two sub-groups. APM0 (adversity_primed_placebo) is primed with adversity whereas NPM0 (neutral_primed_placebo) is primed neutrally, and RTG0 overall receives a placebo remedial treatment. Therefore, the end line effect should ideally only reflect the effect of priming. Table 3.6 summarizes the impact of priming on outcome variables *locus z-score, effort z-score, luck z-score* and θ. Panel A represents simple difference between APM0 (adversity_primed_placebo) and NPM0 (neutral_primed_placebo) at endline using specification 1. The first finding to note in this table is that the group that is primed with adversity APM0 (adversity_primed_placebo) is significantly less likely to possess 0.99 standard deviations of locus of control compared to the baseline mean (Panel A-Column 1). This group is also significantly likely to chose a level of effort that is 1.25 standard deviations lesser compared to the baseline mean (Panel A-Column 2). However, they are also likely to chose chance significantly 0.82 standard deviations higher (Panel A-Column 3). This downward trend in one's effort and upward trend in depending on chance is indicative of one attaching higher belief with chance and lower belief in effort. This also reflects one's rational response to the effect of priming with socioeconomic adversity that aimed at inducing the sense of powerlessness that deprivation entails. Recall that the experience of hardships of socioeconomic adversity may make one more *externally* oriented. This is evident in the revealed preference of locus (θ) that is 0.14 percentage points significantly lower (Panel A-Column 4) amongst APM0 (adversity_primed_placebo) post priming. Panel B in Table 3.6 represents the difference-in-difference estimates using Specification 2. The results are of a similar order and magnitude as of Panel A and hence the findings could be cited as robust to this alternative. The results of Table 3.6 validate the hypothesis that being exposed to adverse socio-economic conditions do impair both *locus of control* and *persistence at effort*. One seems to rely much more on chance or happenstance for life outcomes and assign much lesser value to effort in achieving outcomes. Why does the priming treatment reduce persistence at effort in attempting to obtain the total score? One explanation may be that the children who were primed with adversity believe that they cannot improve their total score by choosing the task that

Table 3. 6: Priming Outcome

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: End line				Panel B: Diff-in-Diff			
	Locus *z-score*	Effort *z-score*	Luck *z-score*	θ	Locus *z-score*	Effort *z-score*	Luck *z-score*	θ
Treatment	-0.99 (0.183)***	-1.254 (0.186)***	0.819 (0.249)***	-0.143 (0.025)***	-0.137 (0.191)	0.138 (0.138)	-0.005 (0.248)	0.047 (0.041)
Post					0.101 (0.113)	0.523 (0.121)***	0.18 (0.209)	0.016 (0.028)
Treatment*Post					-0.852 (0.168)***	-1.381 (0.177)***	0.807 (0.383)**	-0.188 (0.047)***
Grade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Overall R-sq.	0.2146	0.2457	0.1212	0.2945	0.1464	0.1637	0.1453	0.1718
N	56	56	56	56	112	112	112	112

Notes: Treatment indicates if individual was given Adversity Priming or Neutral Priming.

Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, ***significant at 1 percent.

Columns 1-4 report differences between treatment and control using end line data while columns 5-8 use difference-in-differences. See text for details of the various outcome variables

requires them to persistently expend effort despite failure. Rather they believe they are better off leaving the outcome in the hands of destiny or chance.

3.6.2. Remedial Intervention Effect

In the following, we examine the effect of the two different remedial interventions on the choices of outcomes in the real effort-chance game and self-reported locus of control. Section (i) presents the results for remedial intervention RTG1 and Section (ii) presents the results for remedial intervention RTG2. The remedial intervention RTG1 is life-skill training alone and RTG2 is a combination of life-skill training and role-model that challenge excess belief in externalities. The objective is to test whether either or both of them are able to mitigate the impact of adversity imposed by the priming session on APM (adversity_primed). The results are summarized in Table 3.7 and 3.8.

i. Effect of Life-skill Training (RTG1)

Panel A in Table 3.7 represents the simple difference between APM1 (adversity_primed_ls) and NPM1 (neutral_primed_ls) using specification 1 at the end line after both received the same remedial treatment RTG1. The results indicate that the participants in APM1 (adversity_primed_ls) is likely to be 0.22 standard deviations significantly lower in the locus of control scale than the baseline mean (Panel A-Column 1) as compared to NPM1 (neutral_primed_ls). APM1 (adversity_primed_ls) is also likely to chose a level of effort that is 5.10 standard deviations significantly lower than the baseline mean as opposed to NPM1 (neutral_primed_ls) (Panel A-Column 2). However, APM1 (adversity_primed_ls) is likely to be 1.30 standard deviations significantly higher in relying on luck than NPM1 (neutral_primed_ls) (Panel A-Column 3). The significantly lower self-reported locus of control, the comparatively lower dependency on effort and higher dependency on luck as a means to maximize game score indicate the dropping value of persevering effort from the perspective of APM1 (adversity_primed_ls). This is reflective in the value of θ that is 0.29 percentage points lower amongst the treatment group at end line as compared to the control group. Panel B in Table 3.7 presents results from difference-in-difference and are of the same order and magnitude that of Panel A. The results confirm that the activities of life-skill training alone is unable to mitigate the impact of adversity priming on locus and the choice of effort. However, it is noteworthy that though life-skill training is unable to mitigate the impact of adversity priming on treatment group, the intervention does improve outcomes significantly in both the groups. The overall end line results show 2.65 standard deviations significant increase in locus, 10.07 standard deviations significant increase in effort score, 0.59 standard deviations significant drop in luck score and 0.43 percentage points increase in the value of θ (Panel B-Row 2). Therefore, the overall end line result

indicates shift of locus towards internal and better persistence with one's effort rather than depending on chance, reflects upon the efficacy of life-skill intervention as a tool to treat *locus* and improve persistence attitude. The intervention is designed just to encourage belief in effort, but as an offshoot, we also observe one chooses to depend on chance lesser, which is unanticipated. This clearly indicates that life-skill training is successful in encouraging one to take control of life. Though this is the ultimate goal of the intervention, since APM1 (adversity_primed_ls) is significantly lower than NPM1 (neutral_primed_ls) at end line, we can safely say that the adversity treated are not yet comparable with the control.

ii. Effect of Reference-dependent Life-skill Training (RTG2)

Table 3.8 summarizes the effect of remedial intervention RTG2 (life skill training+role model). Panel A of Table 3.8 presents the difference between APM2 (adversity_primed_ls_rm) and NPM2 (neutral_primed_ls_rm) group at end line using specification 1. The implication of a change in belief regarding the efficacy of effort in driving outcomes can be far reaching. If a child who under the impact of adversity believes that there is nothing much one can do to drive outcomes and it is always easier and wiser to leave outcomes on chance as that is the factor that drives outcomes, may be convinced by breaking this belief based on evidence, one can at least see improvements in the short-run choices of persisting at effort. As an offspring, we may also see one's excessive belief in chance or destiny reducing. However, for the intervention to be able enough to mitigate the impact of adversity priming there should not be any significant difference between the treatment and control group at the end line. Panel A in Table 3.8 indicates that APM2 (adversity_primed_ls_rm) is likely to report locus 1.08 standard deviations significantly higher relative to NPM2 (neutral_primed_ls_rm) in the locus of control scale (Panel A-Column 1). APM2 (adversity_primed_ls_rm) is also likely to obtain an effort persistence score that is 7.53 standard deviations significantly higher than NPM2 (neutral_primed_ls_rm) (Panel A-Column 2). APM2 (adversity_primed_ls_rm) depends on chance 1.45 standard deviations significantly lesser in absolute terms and attach 0.26 percentage points significantly higher value to effort (Panel A-Column 3/4).

Table 3. 7: Difference-in-Difference Result – Remedial Intervention Type I (RTG1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: End line				Panel B: Diff-in-Diff			
	Locus *z-score*	Effort *z-score*	Luck z-score	θ	Locus *z-score*	Effort *z-score*	Luck z-score	θ
Treatment	-0.223	-5.096	1.301	-0.285	0.286	-0.16	-0.212	-0.009
	(0.095)**	(0.818)***	(0.208)***	(0.037)**	(0.128)**	(0.163)	(0.223)	(0.034)
Post					2.652	10.065	-0.594	0.433
					(0.062)***	(0.691)***	(0.201)***	(0.035)***
Treatment*Post					-0.510	-4.936	1.513	-0.275
					(0.109)***	(0.872)***	(0.289)***	(0.049)***
Grade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Overall R-sq.	0.022	0.294	0.306	0.379	0.692	0.679	0.178	0.489
N	90	90	90	90	180	180	180	180

Notes: Treatment indicates if individual was given Adversity Priming or Neutral Priming.

Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, ***significant at 1 percent.

Columns 1-4 report differences between treatment and control using end line data while columns 5-8 use difference-in-differences. See text for details of the various outcome variables

The results are robust when validated against the magnitude and direction of the results depicted by the difference-in-difference estimation summarized in Panel B of Table 3.8. Therefore, it could be easily said that RTG2 is able to significantly mitigate the impact of adversity imposed by the priming session on the treatment group.

The groups APM1 (adversity_primed_ls) and APM2 (adversity_primed_ls_rm) go through the same priming session and given that the difference between the groups at baseline is insignificant, the difference in end line outcomes between the two groups can only be attributed to the remedial interventions (APM1 receives RTG1; APM2 receives RTG2). Table 3.9 summarizes the difference-in-difference results of a comparison between APM1 (adversity_primed_ls) and APM2 (adversity_primed_ls_rm). We see that RTG2 in more effective in absolute terms in improving locus by an additional 1.01 standard deviation and persistence at effort by 12.51 standard deviations. These results are indicative of the fact that the complementarity between life-skill training and role-model effect acts most efficiently than life-skill training alone. The results are rational because just equipping one with self-regulation tools to deal with adversities does not necessarily imply that one would have the conviction to use the same given one's circumstances; breaking belief is critical. In addition, as we observe under the results of Table 3.9 that role-model effect alone may significantly improve one's attitude towards persistence. However, the effects here are only short-term, in case of long-term real life situations one also requires to be empowered with the necessary life-skills. These results also go a step further in confirming empirically the causal impact that one’s locus of control may have on persistence attitude.

The point that needs to be understood with clarity here is why RTG2 worked better than RTG1. The difference between the design of the remedial intervention tell us that it is the complementarity between life-skill training and reference dependent treatment that treated *locus* significantly better to mitigate the impact of adversity on *persistence* attitude. Under the influence of adversity priming the treatment group is expected to be overwhelmed by the negative influences and be more externally oriented, just like how one behaves under a crisis. Therefore, RTG2 possibly helped the treated dissociate from this belief by reassuring through the reference treatment that even under adverse conditions one can attain desired outcomes with *persistent effort*. To note, the results show that besides improvement in one’s persistence at expending effort, one also depended significantly lesser on chance both in absolute and relative terms. Therefore, the overall results of remedial intervention clearly indicate one taking higher control of outcomes. In this case,

Table 3. 8: Difference-in-Difference Result – Remedial Intervention Type II (RTG2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: End line				Panel B: Diff-in-Diff			
	Locus *z-score*	Effort *z-score*	Luck z-score	θ	Locus *z-score*	Effort *z-score*	Luck z-score	θ
Treatment	1.076	7.534	-1.454	0.262	-0.009	-0.021	-0.186	-0.008
	(0.107)***	(1.343)***	(0.204)***	(0.036)***	(0.154)	(0.279)	(0.207)	(0.031)
Post					2.08	10.113	-0.128	0.402
					(0.096)***	(0.783)***	(0.269)	(0.042)***
Treatment*Post					1.068	7.525	-1.271	0.269
					(0.192)***	(1.452)***	(0.308)***	(0.049)***
Grade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Overall R-sq.	0.443	0.235	0.348	0.372	0.697	0.703	0.296	0.746
N	90	90	90	90	180	180	180	180

Notes: Treatment indicates if individual is given Adversity Priming or Neutral Priming.

Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, ***significant at 1 percent.

Columns 1-4 report differences between treatment and control using end line data while columns 5-8 use difference-in-differences. See text for details of the various outcome variables

Table 3. 9: Difference-in-Difference Result (APM1 vs. APM2)

	(1)	(2)	(3)	(4)
	Locus *z-score*	Effort *z-score*	Luck *z-score*	θ
APM (=2)	-0.251	-0.117	0.067	-0.025
	(0.151)	(0.189)	(0.208)	(0.029)
Post (=1)	2.143	5.128	0.918	0.157
	(0.090)***	(0.519)***	(0.202)***	(0.034)***
APM (=2)*Post	1.005	12.509	-2.318	0.514
	(0.191)***	(1.366)***	(0.248)***	(0.042)***
Grade Fixed Effects	Yes	Yes	Yes	Yes
Overall R-sq.	0.717	0.716	0.448	0.753
N	180	180	180	180

Notes: Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, ***significant at 1 percent

we observe at baseline that even though participants are provided with the knowhow of whether the task is effort based or chance based, there is a very low persistence at effort and participants rather prefer depending on the chance task to score. Such behaviour can only be explained by the fact that since the participants are informed that both the tasks would be accounted for via the same scoring pattern, they choose the easier way rather than the way that will give them better control on outcomes. On being exposed to adversity priming persistence reduces significantly further, but when locus is treated effectively, persistence improves again. Therefore, establishing locus as an evident channel through which exposure to socioeconomic adversities may affect one's attitude towards persistence negatively. The NGO's typical after-school life-skill training program follows the pattern of RTG2, hence in next section I analyse whether time period of being enrolled onto the NGO's graduate program had any impact on outcomes.

i. NGO Enrolment Effect and Age Effect

Table 3.10 presents results of the remedial treatments (RTG1 & RTG2) by NGO membership. Each student who participates in this study has been part of the NGO's after school program for a certain number of years. Since the NGO's intervention is aligned to that of RTG2, it is worth verifying whether the length of time one has spent in the NGO's program has any effect in the way one reacts to the remedial treatment. From Section (i) above we see that the remedial intervention RTG1 is unable to mitigate the impact of adversity priming on the treatment group. However when one has already been with the NGO's graduate program for four years, one is likely to report a locus that is further 0.87 standard deviations significantly below someone who has rather been with the NGO only for a year. In addition, in that case one is also likely to choose a level of persistence that is 2.89 standard deviation significantly lower than someone who has been with the NGO for just one year. This effect reverses in case of the remedial intervention RTG2. RTG2 is effective overall in mitigating the impact of adversity, nevertheless works significantly better in improving locus in case of the fourth year NGO graduates by 0.80 standard deviation. RTG1 aims to treat locus through life-skill training alone without any component of breaking belief and therefore may not be efficient enough in altering belief of fourth year students who are likely to be more prone to attending a life-skill training by virtue of the time spent with the NGO. On the contrary, RTG2 is successful rather more effective in altering belief of the fourth year NGO graduates possibly as a reaction to the reference-dependent element of the intervention that challenges excess beliefs in

externalities head-on. Therefore, having been through the NGO's program has only enhanced the capacity of the participants in imbibing the message from a training program positively. The above discussed differential effect of remedial treatments by NGO membership could also entail the fact that the students who are enrolled with the NGO for four years are the elder students, therefore age having an implicit role to play in the effect. Table 3.11 summarizes the effect of the remedial treatment by age. Results show that RTG1 is 0.08 standard deviations significantly less effective in altering locus with age. On the contrary, RTG2 is 0.41 standard deviations significantly more effective with age on locus. RTG2 is also 0.03 percentage points significantly more impactful with age in improving one's dependence on effort as opposed to chance. Drawing back to the point that locus is not a very malleable psychological variable. As one's belief gets stronger with age, it is more difficult to alter locus in older participants. The effect of RTG2 on locus and θ increases significantly with age. Plausibly because RTG2 is a stronger treatment designed to break belief, its increasing effectiveness with age just highlights that stronger treatments that can 'challenge beliefs' can work better with increasing age in altering locus. Though RTG1 overall improves the outcomes, it is relatively ineffective in altering beliefs amongst older participants as belief only gets stronger with age and repeated experiences. The participants in this study hailing from an adverse background, the adversity priming in all probability resonate with their experiences of reality, making it harder to break their excess belief in externalities, especially for the older participants. As children develop further into adolescence, perhaps their sense of competence and personal control, especially in areas in which they cannot attribute personal causality, may change from relatively internal to external perceptions (Sherman L. W., 1984), as a Lewinian (Lewin, 1951) explanation of development suggests that children increase in their perceptions of reality. Therefore, setting in of adolescence makes a significant difference in the type of interventions that may or may not be effective because adolescence is a difficult and stressful period (Blos, 1962; Erikson, 1950) and if so, personality variable like locus of control can be expected to behave differently as one is approaching adulthood (Chubb, Fertman, & Ross, 1997). Therefore, it is conclusive of the fact that to alter locus effectively one must start early and reference-dependent like-skill intervention may be used as an effective tool for the same.

Table 3. 10: NGO Membership Effect

	Remedial Treatment Type I - RTG1				Remedial Treatment Type II - RTG2			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Locus *z-score*	Effort *z-score*	Luck z-score	θ	Locus *z-score*	Effort *z-score*	Luck z-score	θ
Post	2.513	11.359	-0.083	0.319	1.853	11.455	0.692	0.284
	(0.162)***	(0.808)***	(0.437)	(0.090)***	(0.216)***	(1.529)***	(0.306)**	(0.073)***
Treat	0.408	-0.441	0.181	-0.106	-0.174	-0.279	0.332	-0.09
	(0.35)	(0.327)	(0.393)	(0.079)	(0.256)	(0.633)	(0.328)	(0.059)
Treatment*Post	-0.188	-4.13	1.26	-0.143	0.631	4.569	-2.171	0.347
	(0.281)	(1.079)***	(0.541)**	(0.106)	(0.293)	(2.767)	(0.402)***	(0.084)***
NGO membership year 2	0.408	-0.148	0.853	-0.128	-0.097	-1.376	-0.792	0.028
	(0.336)	(0.758)	(0.445)*	(0.078)	(0.35)	(1.287)	(0.457)*	(0.097)
NGO membership year 3	0.181	0.652	1.147	-0.107	-0.6	-1.463	-0.448	-0.064
	(0.333)	(1.063)	(0.476)**	(0.089)	(0.38)	(1.325)	(-0.414)	(0.062)
NGO membership year 4	0.023	-0.336	0.561	-0.107	-0.764	-1.95	0.382	-0.12
	(0.327)	(1.143)	(0.48)	(0.092)	(0.333)	(1.269)	(0.402)	(0.051)*
Post*Year2	-0.07	-4.421	-1.133	0.094	0.066	-5.345	-0.607	-0.02
	(0.217)	(1.839)**	(0.568)**	(0.109)	(0.242)	(2.113)**	(0.626)	(0.117)
Post*Year3	0.157	-1.493	-0.657	0.119	0.128	-2.163	-1.721	0.204
	(0.19)	(1.806)	(0.515)	(0.113)	(0.263)	(2.091)	(0.669)**	(0.117)*
Post*Year4	0.359	-0.038	-0.352	0.202	0.611	1.217	-0.697	0.221
	(0.178)**	(1.162)	(0.629)	(0.107)*	(0.29)**	(1.941)	(0.598)	(0.094)**
Treat*Year2	-0.503	0.063	-0.534	0.173	-0.131	-0.003	0.285	-0.02
	(0.429)	(0.581)	(0.688)	(0.124)	(0.356)	(0.719)	(0.566)	(0.101)
Treat*Year3	-0.188	0.337	-0.82	0.148	0.514	0.611	-1.153	0.216
	(0.421)	(0.504)	(0.586)	(0.101)	(0.394)	(0.83)	(0.587)*	(0.102)**
Treat*Year4	0.095	0.433	-0.214	0.065	0.241	0.282	-0.977	0.137
	(0.433)	(0.364)	(0.564)	(0.095)	(0.414)	(0.796)	(0.505)*	(0.068)**
Treatment*Post*NGO membership year 2	0.101	2.446	0.096	-0.089	0.619	5.083	0.569	0.082
	(0.321)	(2.227)	(0.806)	(0.161)	(0.432)	(3.558)	(0.754)	(0.132)
Treatment*Post*NGO membership year 3	-0.283	-1.413	0.565	-0.193	0.018	3.73	1.78	-0.21
	(0.314)	(2.262)	(0.76)	(0.145)	(0.334)	(3.756)	(0.874)**	(0.15)
Treatment*Post*NGO membership year 4	-0.871	-2.886	0.195	-0.192	0.799	2.979	0.933	-0.141
	(0.363)**	(1.587)*	(0.809)	(0.135)	(0.477)*	(4.141)	(0.721)	(0.112)
Session Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Overall R-sq.	0.700	0.714	0.229	0.528	0.749	0.727	0.329	0.761
N	180	180	180	180	180	180	180	180

Notes: Treatment indicates if individual is given Adversity Priming or Neutral Priming.
Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, **significant at 1 percent.
Columns 1-4presents difference-in-difference results for Type I (RTG1) remedial treatment, whereas, Column 5-8 presents results from Type II (RTG2) remedial treatment. Membership of the NGO has been measured at Baseline. See text for details of the various outcome variables NGO membership year 1

Table 3. 11: Age Effect

	Remedial Treatment Type I - RTG1				Remedial Treatment Type II - RTG2			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Locus *z-score*	Effort *z-score*	Luck z-score	θ	Locus *z-score*	Effort *z-score*	Luck z-score	θ
Post	2.652 (0.062)***	10.065 (0.695)***	-0.594 (0.202)***	0.433 (0.035)***	2.08 (0.097)***	10.113 (0.787)***	-0.128 (0.27)	0.402 (0.042)***
Treat	0.286 (0.127)**	-0.161 (0.166)	-0.212 (0.225)	-0.01 (0.034)	0.007 (0.142)	-0.105 (0.263)	-0.214 (0.205)	-0.004 (0.029)
Treatment*Post	0.487 (0.42)	-6.196 (3.447)*	1.254 (1.029)	-0.483 (0.17)***	-3.912 (0.415)***	-3.237 (8.291)	-0.527 (0.671)	-0.08 (0.149)
Age	-0.1 (0.086)	-0.244 (0.288)	-0.072 (0.12)	-0.006 (0.02)	-0.195 (0.114)*	0.542 (0.651)	0.24 (0.109)**	-0.04 (0.024)
Treatment*Post*Age	-0.083 (0.037)**	0.105 (0.29)	0.022 (0.088)	0.017 (0.014)	0.413 (0.036)***	0.893 (0.719)	-0.062 (0.05)	0.029 (0.012)**
Session Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.793	0.702	0.153	0.497	0.793	0.696	0.256	0.767
N	180	180	180	180	180	180	180	180

Notes: Treatment indicates if individual is given Adversity Priming or Neutral Priming.
Standard errors, in parentheses, are robust and clustered at the household level. *significant at 10 percent, ** significant at 5 percent, **significant at 1 percent.
Columns 1-4presents difference-in-difference results for Type I (RTG1) remedial treatment, whereas, Column 5-8 presents results from Type II (RTG2) remedial treatment.

3.7. Conclusion

Using a sample from urban poor location in Bangalore (India), I evaluate a randomized educational intervention that aims to alter belief in the merits of effort in a classroom environment and analyzes its efficacy in mitigating the impact imposed by adversity priming. I estimate the effect of treatment on (i) outcomes in an effort-chance experimental task (ii) self-reported locus of control after the implementation of the priming and remedial intervention. We witness significant impact of the socioeconomic adversity priming exercise on the locus of control, persistence at effort and observed dependence on effort versus luck amongst the treated. When exposed to the adverse socioeconomic stimuli one tends to be more externally oriented, tends to persist at effort lesser in absolute terms and depend lesser on effort relative to chance in the experimental task. We also see significant effect of the remedial intervention on the outcomes in the experimental effort-chance task and self-reported locus of control. However, the remedial intervention life-skill training alone is unable to mitigate the impact of adversity imposed by the priming exercise. The remedial intervention that combines role-model effect along with life-skill training is able to challenge belief amongst the treated more successfully. However, this effect is different across age and NGO membership. The treated participants who receive Type II remedial intervention are significantly more likely to select the effort task for maximizing game score, more likely to report an internal sense of control and more likely to rely on chance for outcomes than the control group who are neutrally primed, highlighting the efficacy of reference-dependent life-skill as a tool to mitigate the impact of adversity. All the effects are of considerable size. The remedial interventions are designed to treat locus in particular, therefore the channel of effect from adversity priming to effective persistence of effort is mediated by locus of control. We can rule out any effect through alternative channels like self-control as there was no immediate reward or incentives involved, risk or time preference as either of those preferences would not change in a short time frame of 3 hours.

From the policy perspective this chapter primarily contributes to the ongoing debate about the efficacy of behavioural interventions in mitigating the impact of adversity (Ghosal, Jana, Mani, Mitra , & Roy, 2016). This chapter also contributes to the debate on the malleability of non-cognitive skills and the role of educational interventions in improving achievement outcomes (Almlund, Duckworth, Heckman, & Kautz, 2011; Kautz, Heckman, Diris, Weel, & Borghans, 2014). The results provide an alternative answer to the question of malleability of non-cognitive skills that might be impacted by the experience of

socioeconomic adversity and brings forth the efficacy of a low-cost educational intervention like life-skill training in the natural environment of classroom. Being able to achieve such an impact in the school environment provides hope that the attitude of persistence could be enhanced amongst children from socioeconomically adverse communities from an early age that may then further be able to reduce persistence achievement gaps in later adult years. This would also be beneficial for developing countries where policies face challenges in trying to engage families from lower socio-economic strata for holistic development of children.

A potential caveat relates to external validity, since the study is conducted with a comparatively smaller sample of children. The homogeneity of the sample scopes the opportunity for creating socioeconomic variation through priming, however it also limits the results to that of a particular study area only. However, the effects are sizeable and scaling-up an intervention as used in this study is likely to be effective. On a final note, the results are short-term and we do not know whether the impact achieved would change over time. Nevertheless, the results may not be short-lived if such an intervention is given an early start and made part of regular routine over majority of school life. That may alter the way the children growing up under socioeconomic adversity shape their beliefs, aspire or persist effort over long term despite challenge and succeed. The success realizations would then create a productive cycle of further effort. In this regard, future avenues of research that this study motivates, beginning with setting interventions of alternative intensities (durations) or combinations that test longer term effect on children from different regions in India or other developing countries are encouraged.

Chapter 4

Compensating Variation of External Locus of Control amongst the Marginalized Population: The Leyden Welfare Approach

Abstract

This chapter uses the Leyden Welfare approach to estimate the compensating variation of being externally oriented when one is already living a life of marginalization and deprivation. The feeling of lack of control over outcomes in life is a negative economic change as external locus may lead to a loss of aspiration in trying harder to alter status quo and therefore a forgone income. Hence, there may be a loss of utility operating through the forgone income. In addition, being externally oriented is an impairment in behavioural factor that makes one feel handicapped of controlling outcomes in one's life leading to loss of utility. Therefore, the compensating variation of being an externally oriented individual is the minimum amount the individual requires to accept this feeling of lack of control over outcomes in life. The Leyden approach uses an individual welfare function (WFI) that is applied to calculate the utility. This approach avoids the drawbacks of alternative willingness-to-pay method and provides a pragmatic method of calculating the difference in utility of an internal versus external individual. The results studied based on a sample of 185 responses show that the compensating variation of external locus of control amongst the marginalized is 0.24 in income equivalence terms.

4.1. Introduction

Academic achievement, transition from education to work or pursuing further education, labour market choices, are critical developmental constituents in context of later life outcomes in adulthood. However, when one is born to a marginalized background, one has

to persistently struggle against the enduring social inequalities that continue to shape the challenges one is facing, to reach the desirable life outcomes. Evidence suggests that children born to socioeconomic adversity have lower levels of educational attainment (Bradley & Corwyn, 2002; Engle & Black, 2008; Schoon, et al., 2002), educational achievement motivation (Duckworth & Schoon, 2012), tend to dropout of education earlier and are more likely to encounter problems in the transition from school to work (Furstenberg, 2008; Schoon & Lyons-Amos, 2016; 2017), experience prolonged periods of time spent not being in education, employment or training (Bynner & Parsons, 2002; Schoon & Lyons-Amos, 2017; 2016). Non-cognitive skills have exhibited ability to predict adult year outcomes independent of parental social background or cognitive ability and therefore have drawn attention in recent years in explaining the difference in achievement outcomes amongst marginalized (Heckman & Kautz, 2012). One such key non-cognitive factor is locus of control. We witnessed in Chapter 2 that children growing up under socioeconomic adversity tend to hold external locus of control with age and in Chapter 3 we studied how being exposed to adverse socioeconomic stimuli hampers one's locus of control and consequently perseverance. Therefore, these vulnerable children are at risk. However, on the better side, evidence also suggests that some succeeded against odds and are able to establish themselves in the labour market or pursue an academic career despite the experience of parental socioeconomic hardship (Duckworth & Schoon, 2012; Heckhausen & Chang, 2009). Therefore, the goal is to pin down the attributes that helped the success of the ones who did turn out successful despite odds. Locus may be one of the key non-cognitive factor as it is directly related to perseverance and may enable these vulnerable children to mobilize the limited resources available and take advantage of the opportunities. Regrettably, evidence suggests an inverse relationship between marginalization and locus of control (Ahlin & Antunes, 2015; Battle & Rotter, 1963; Flouri, 2006; Moilanen & Shen, 2014). Nevertheless, since *locus* is a belief it is malleable with carefully designed early intervention as discussed in Chapter 3, intervening could definitely be of potential benefit to the vulnerable children in beating the odds and avoiding cumulative disadvantage compared to those who lack both structural support and locus of control. However, before designing any policy it is important to have an estimate of the welfare gain from the policy. Good design of public policy requires that the social benefit of a policy intervention should be at least as great as the cost of the policy. Therefore, welfare analysis is mandatory.

In this chapter I make an attempt to calculate the compensating variation of being externally oriented versus internal, when one is already born to socioeconomic adversity. I make this attempt based on the analogy that locus of control almost emulates the mental implications of any health impairment. When one is externally oriented, one feels the lack of control over outcomes and deficit of some kind of ability, just like a health impairment. However, this chapter comes with a lot of limitations. Therefore, the goal here is to focus on the application of methodology rather than the actual numbers. The ideal aim of this chapter would be to carry out a cost-benefit analysis for an intervention that treats locus of control amongst children from marginalized background. However, due to lack of data since it is not possible, I use data collected on the mothers of the children who participated in the randomized controlled trial in Chapter 3. This chapter is based on an underlying assumption that the mothers were intervened when young for locus. Now as adults, comparing the locus of control of the mothers who are internal versus external can give us an estimate of the welfare loss due to external locus of control.

The first step to conducting a cost-benefit analysis is choosing a tool to measure utility as utility acts as the proxy for welfare gain or loss. Any intervention is beneficial only if it adds welfare beyond what the consumers are willing-to-pay. Therefore, willingness-to-pay represents the utility one attaches to the intervention. Two predominant methods of calculating willingness-to-pay comes with several limitations and restrictions. The existing methods to calculate the willingness-to-pay can be classified by the method of measuring preference – i) preference deduced from observed behaviour (revealed preference), ii) individuals are asked directly to state their preferences. However, in this case when one has externally oriented locus of control, one might not even be aware of merits of possible alternatives in life when one starts to orient his control internally. Therefore, willingness-to-pay is not an apt method to calculate utility in this case. In addition, the benefits of an intervention tackling locus of control are not tangible. When the objective of a policy is intangible like better mental health, greater personal security or improved wellbeing, it is impossible to draw a conclusion without some way of comparing tangible costs with anticipated intangible benefits. Hence in this chapter I adopt the Leyden welfare approach.

Being externally oriented is a negative economic change and may not be in the best interest of socioeconomic transformation as long as the marginalized population is considered. When one is living under conditions of socioeconomic adversity being externally oriented would imply that one would make little efforts to alter status quo and as a result, there may

be an opportunity cost or forgone income. In addition, this sense of less control over outcomes may also reduce one's welfare as it may make one feel handicapped. Using a specific utility function, known as the Leyden welfare function of income, I am able to estimate the compensating income variation needed to make someone with *external locus of control* accept this lack of control over outcomes in life. This approach has the advantage that it is easy to apply and to understand. It further has the advantage that it does not require that respondents evaluate hypothetical situations. The Leyden welfare function is developed and corroborated in a large body of research and has been used to calculate the compensating variation of changes in health, household size, climate, and schooling and intelligence[31]. However, to the best of my knowledge, the Leyden method has never been used to estimate the compensating variation of change in a non-cognitive factor. As discussed in earlier chapters, locus of control play a critical role in some way in.Therefore, it is completely logical to carry out an economic evaluation that calculates the loss of welfare due to *external locus of control*.

The outline of the chapter is as follows. Section 4.2 presents the model, Section 4.3 provides a brief description of the Leyden welfare function of income, Section 4.4 describes the data, Section 4.5 presents the results, Section 4.6 uses the results to calculate the compensating variation of income and finally Section 4.7 concludes.

4.2. The Model

In this chapter, I will monetarize impairment in locus of control using the idea of compensating income variation. To do so, we require a utility function that describes the relationship between an individual's utility, income and locus of control at time t. Suppose that we can write this utility function as,

$$U = U_t(Y_t, L_t) \tag{4.1}$$

Where Y is income and L is locus, and where utility is increasing in both arguments Y and L in case of the marginalized population. With this function compensating income

[31] Examples are (Van Praag & Kapteyn, 1973; Van Praag, Goedhart, & Kapteyn, 1980; Hagenaars & Van Praag, 1985; Van de Stadt, Kapteyn, & Van de Geer, 1985; Van Praag B. , 1991; Plug & Van Praag, 1998; Plug, Van Praag, & Hartog, 1999)

variation of a change in locus of control from *internal* to *external* is calculated by solving equation,

$$U_t\,(Y_{0t}, L_{0t}) = U_t(Y_{1t}, L_{1t}) = U_0 \tag{4.2}$$

Given, L_0 is internal locus of control and L_1 is external locus of control, and $L_0 > L_1$
It follows that $Y_{1t} - Y_{0t}$ is the adjustment in income required to make an externally oriented individual with locus L_1 as well off as the individual with internal locus of control L_0. We take the individual with internal locus of control as our point of reference represented by utility level U_0. For any positive monotonic transformation of the utility function, equality in (4.2) remains unaffected. Hence, the calculation of the compensating income variation at time t is given by,

$$CIV_t = Y_{1t} - Y_{0t} \tag{4.3}$$

This model forms the essence for the empirical application where I will estimate the compensating income variation (CIV) for having an external locus of control. In what follows, we will estimate a utility function U(Y, L; X) where y is annual income, L is dummy which has value one for external locus of control and zero if internal locus of control, and x is a vector of intervening variables like family size, education, employment status, etc.

4.3. The Leyden Welfare Function

The following description of the Leyden welfare function is verbatim from Groot, Van Den Brink, & Plug (2004). This method of welfare measurement was originally initiated by Van Praag (1968; 1971) and Van Praag and Kapteyn (1973). The notion that nearly all individuals are able to evaluate their situation in relative terms by positioning it somewhere between a 'worst' situation and a 'best' situation has been adopted by the Leyden school. The empirical literature around the Leyden welfare function of income (WFI) is based on a specific attitude question. This question is called the Income Evaluation Question or IEQ (Van Praag B. , 1971) and runs as follows: "Which monthly household after tax income would you in your circumstances consider to be very bad? Bad? Insufficient? Sufficient? Good? Very good?"

About €...very bad

About €...bad

About €...insufficient

About €...sufficient

About €...good

About €...very good

The answers of the IEQ are denoted as c1, c2, c3, c4, c5 and c6. If we accept that the answers linked to the verbal qualifiers "very bad, bad, insufficient, sufficient, good" and "very good" are evaluations of welfare derived from these various income levels, the IEQ gives us six points on an individual welfare function (Van Praag B. , 1991). The Equal Interval Assumption (Van Praag B. , 1971) translates these verbal qualifications on a numerical scale:

$$U\,(\,C_k) = \frac{2k-1}{12} \tag{4.4}$$

Where k runs from 1 to 6. The fact that the labels are placed equidistant from one another is examined in Buyze (1982) and Van Praag (1991). Both test the Equal Interval Assumption and do not reject it. On theoretical and empirical grounds U(Y) is approximated by a lognormal distribution function (Van Praag B. , 1968; 1991; Van Herwaarden & Kapteyn, 1981). Then, utility can be written as:

$$U\,(Y) = \boldsymbol{\Lambda}\,(\,Y;\,\mu,\sigma) = N\left(\frac{\ln Y - \mu}{\sigma}\,;0{,}1\right) \tag{4.5}$$

Where Λ stands for the lognormal distribution function, N stands for the standard normal distribution function. The welfare parameter μ is estimated by:

$$\mu = \frac{1}{6}\sum_{k=1}^{6} C_k \tag{4.6}$$

The parameter σ is estimated analogously by:

$$\sigma^2 = \frac{1}{5}\sum_{k=1}^{6}(\ln C_k - \mu)^2 \tag{4.7}$$

Since the IEQ clearly states that answers have to be given "in your circumstances", the welfare function is measured conditional on these circumstances. The two welfare

parameters are also conditionally measured and I therefore assume μ and σ to vary over individuals and households.

The traditional explanation for differences in μ is that families with different net family incomes y and family sizes f_s will respond differently to the Income Evaluation Question. Family size is included because children within the household create costs and therefore influence perceived welfare. Income is included to reflect the way people adapt their income judgment to changes in their current income. This is referred to as preference drift (Van Praag B. , 1971). The following relationship has been shown to hold:

$$\mu = \beta_0 + \beta_1 \ln f_s + \beta_2 \ln Y \tag{4.8}$$

This method has yielded stable and consistent results covering two decades, many countries and many populations. The results presented in Table 4.2 form no exception. With respect to the parameter σ, it turns out that it is not so easy to explain. In this chapter, I will continue and treat σ as a random variable in the sample.

4.4. Data

For my analysis, I use the household survey conducted with the mothers of the children who participated in the randomized controlled trial presented in Chapter 3[32]. This is a cross-sectional survey consisting of 185 observations at individual level. The main purpose of conducting the household survey was to collect data on household characteristics, individual characteristics of parents and locus of control of the mothers. I included the Income Evaluation Question since I intended to estimate the compensating variation of an externally oriented adult from marginalized background. Since the survey was conducted with mothers only, we do not have any variation in gender presented in the results. The answers to the IEQ's are strictly increasing in order. The survey also does not record the age of the respondent, as culturally women from such marginalized households are mostly not aware of their own age or hesitant to reveal. However, locus of control has been reported as a stable function of middle age, making this less of an issue. Descriptive statistics appear in Table 4.1.

[32] Refer to Section 3.3

Table 4. 1: Descriptive Statistics of selected variables

	N	Mean	Standard Dev.
Mother_EduSchool	180	0.767	0.424
Mother_EduCollege	180	0.061	0.240
Mother_EduUni	180	0.011	0.105
Mother_EduNone	180	0.161	0.369
Mother_Employed	180	0.628	0.485
Family Income (Monthly)	185	15605.41	3748.33
Family Size	185	4.519	1.518
Locus (Binary_External)	185	0.405	0.492
μ	185	4.102	0.145
σ	185	0.343	0.179

Note: Monthly Income is reported in INR

4.5. Results

4.5.1. Locus of Control and Leyden Welfare

Returning to the traditional μ parameter in (4.8) it is obvious that family size and income do not exhaust the set of explanatory variables. In addition, indeed, in a recent study Plug, van Praag and Hartog (1999) it is found that within the Leyden methodology also education and IQ matter. They conclude that both education and IQ raise needs. However, I do not include IQ in this study but I do include education and employment status. The new variable of interest in the context of this chapter is locus of control indicating whether an individual is *external* or *internal*. Given the impact of aforementioned factors on μ, we assume that the capacity to derive welfare (satisfaction) from income is affected by *locus* of an individual. I expect that having *external locus of control* would reduce one's welfare as feeling lack of control over outcomes in one's life makes one feel impaired. Therefore, the sign of this effect on μ is expected to be negative. Estimation results are presented in Table 4.2. In the first column, I estimate the relation between μ and log (family size) and log (monthly income) without education or employment status and locus of control. I find the usual income and family size effects. We can see that the effect of attending school is also significant. The effect of attending University is initially significant when locus is not in the equation. However, when locus is included, this significance is lost, which indicates an interaction between attending University and locus of control. In the third column, the parameter for locus of control is negative, which corresponds with the idea that having external locus of control might create a fall in experienced welfare.

Table 4. 2: Estimates of the Leyden welfare function

Constant	3.199	*0.423***	3.178	*0.440****	3.287	*0.339****
Log Family Size	0.148	*0.099*	0.001	*0.103*	-0.012	*0.079*
Log Household Income	0.214	*0.101***	0.219	*0.104***	0.149	*0.079**
Mother Edu_School			-0.005	*0.030*	-0.039	*0.023**
Mother Edu_College			-0.004	*0.052*	-0.021	*0.039*
Mother Edu_University			0.186	*0.107**	0.086	*0.082*
Mother_Employed			0.015	*0.023*	0.008	*0.172*
Locus (*External*)					-0.190	*0.017****
R Square	0.025		0.049		0.445	
N	185		180		180	

Note: Standard errors in italics; *, ** and *** implies significance at the 10%, 5% and 1% levels, respectively. The dependent variable in all three columns is the Leyden welfare parameter μ.

4.5.2. Locus of Control and Family Income

Locus of control affects welfare that people derive from their income in two separate ways. The first effect arises because the perception of welfare is directly influenced by locus of control. The second effect is that locus of control affects the capacity to earn income. Because income is an essential input in an individual's welfare function, welfare is indirectly influenced by locus of control through income. In the empirical implementation of the model, I account for this by estimating the coefficients in the income equation. Estimation results are given in Table 4.3. Table 4.3 is similarly structured as Table 4.2. In the first column, I start with our baseline family income equation and find conventional results. However, the results are not significant. In the second column, I include locus of control in the income equation and we see that people with external locus of control receive about 1.7% less income than that of people with internal locus of control.

Table 4. 3: Estimates of the family income function

constant	4.202	*0.022***	4.212	*0.024***
Mother Edu_School	-0.031	*0.022*	-0.034	*0.022*
Mother Edu_College	-0.010	*0.037*	-0.012	*0.037*
Mother Edu_University	0.013	*0.077*	0.003	*0.078*
Mother_Employed	0.002	*0.016*	0.002	*0.016*
Locus (*External*)			-0.017	*0.016*
R Square	0.015		0.020	
N	180		180	

Note: Standard errors in italics; *, ** and *** implies significance at the 10%, 5% and 1% levels, respectively. The dependent variable in all three columns is log monthly income.

4.6. Calculating the compensating income variation of External Locus

How does locus of control affect welfare? With help of the results in Table 4.2 and 4.3, we can shed light on this question. Within the Leyden welfare methodology that is frequently applied to study the effects of children on welfare (Van Praag & Kapteyn, 1973; Plug & Van Praag, 1995; Van Praag & Warnaar, 1997), welfare effects are usually expressed in terms of equivalence scales. In this Section, I will express the effects of external locus of control on welfare in terms of equivalence scales. Let us say that income Y only depends on locus of control (L), and that welfare parameter μ only depends on income Y and locus L, then we can write down the following expressions:

$$\ln Y = \alpha_0 + \alpha_1 L, \text{ and } \mu = \beta_0 + \beta_1 L + \beta_2 \ln Y$$

If z is the equivalence scale, it is easy to see that two individuals with different locus L_0 and L_1 enjoy equal welfare if, and only if,

$$U\left(Y(L_0)\right) = U(zY(L_1)$$

Translated into equivalence in terms of Leyden welfare, this means

$$\ln Y(L_0) - \mu\left(Y(L_0)\right) = \ln zY(L_1) - \mu(zY(L_1) \tag{4.9}$$

Where σ is assumed constant. Keeping everything else constant, substitution of previous equations in (4.9) yields,

$$(1-\beta_2)\alpha_1 L_0 - \beta_1 L_0 = (1-\beta_2)\ln z + (1-\beta_2)\alpha_1 L_1 - \beta_1 L_1$$

Which gives us the solution,

$$\ln z = -\alpha_1(L_1 - L_0) + \frac{\beta_1}{1-\beta_2}(L_1 - L_0) \tag{4.10}$$

We interpret the second term at the right hand side as the direct effect, while the first term reflects the indirect effect. The direct equivalence effect reflects the equivalence scale proper: additional income is needed for people with external locus of control in order to maintain welfare. The indirect effect reflects the fact that an individual with external locus of control earns on average α_1 less: it is the labour market's punishment to an individual's welfare, which is added to the former equivalence effect. However, calculating $[-\alpha_1 + \frac{\beta_1}{1-\beta_2}]$ based on Table 4.2 and Table 4.3 we get -0.24. Therefore, z is 0.575. That implies, the compensating variation of external locus of control on equivalence scale of Y_1/Y_0 is 1.74. This implies that since feeling a sense of external locus of control is a negative economic change, the externally oriented individuals from a marginalized population need to be given a minimum of 1.74 of Y_1/Y_0 to live with this impairment. This effect is similar to the equivalent income variation of a 25 year old having a cardiovascular disease (Groot, Van Den Brink, & Plug, 2004).

4.7. Conclusion

Cost-effectiveness and cost-utility estimates play an increasingly important role in decisions about the adoption of new policy intervention. Limitations on financial resources force governments to make more 'rational' decisions on allocation of public funds. In addition, implementation of educational interventions are much more complicated than other policy instruments. Therefore, an understanding of the welfare gains definitely go a long way in helping the decision making process of whether it is worth investing in. This chapter contributes to answering this question by introducing a new method of calculating compensating variation of eliminating impairments in locus of control amongst the marginalized population: the Leyden Income Evaluation approach. It is found that the compensating variation of external locus of control is 1.74 on the income equivalence scale. The Leyden income evaluation method avoids some of the drawbacks and pitfalls of other methods. However, this study is based on a relatively small sample from an urban poor location in India. Therefore, further analysis that takes into consideration broader sample with more diverse sample would be more deductive. Nevertheless, this study is novel in applying this method of welfare analysis in case of pro-poor behavioural interventions.

Chapter 5

Conclusion

5.1. Summary of key findings of the Thesis

This thesis studied the relationship between locus of control and socioeconomic adversity in the context of India. The evidence provided throughout the thesis contributes to the existing literature in place describing the role of internal constraints in sustaining poverty traps: behavioural or non-cognitive biases may develop as a result of being exposed to socioeconomic adversity which may lead to further unfavourable outcomes. Non-cognitive skills have a significant role to play in one's achievement outcome. However, non-cognitive skills or behavioural factors are prone to biases due to the experiences in life. Although biases exist amongst everyone, when one is living under socioeconomic adversity these biases could lead to unfavourable choices. These self-fulfilling pessimistic choices can do more harm to the impoverished than some of the external constraints or lack of opportunities.

The central hypothesis of this thesis is that under the influence of socioeconomic adversity locus of control may be impaired, leading to the lack of perseverance in life. Therefore, an understanding of the developmental pathway of locus amongst children in India from an average household, an impact analysis of adversity on *locus* and *persistence*, mitigation of this effect with carefully designed interventions and an welfare analysis is the main focus of this thesis. The main empirical findings of the thesis supports the hypothesis. Using a cross-sectional dataset of 184 students from two schools in West Bengal (India) and a second cross-sectional dataset of 236 students from a school located in urban poor Bangalore, Chapter 2 compares the growth trend in locus of control with age between the two groups of children. The two datasets essentially represent marginalized and non-marginalized children. The results show that the non-marginalized group of children exhibit a positive developmental trend of locus with age, that is, they tend to be more internally oriented. Whereas, the non-marginalized children exhibited a reverse growth trend of locus, that is, they tend to be externally oriented with age and this effect is not

linear, the belief grows stronger with age. Chapter 3 took forward the study of the association between socioeconomic adversity and locus of control to the context of an urban poor population in India. It also looks into the effect of socioeconomic adversity on one's perseverance. I used the method of priming to create socioeconomic variation between the treatment and control group. I primed the treatment group with socioeconomic adversity and the control group neutrally and thereafter studied the effect of adversity priming on perseverance in an experimental effort-chance task and self-reported locus of control. I showed that under the influence of adversity priming one tends to believe lesser in the merits of effort, persists effort lesser in an experimental effort-chance task and also depends on chance relatively more given a choice than taking control of outcomes. I then used life-skill training as a remedial intervention to mitigate the impact of adversity. I showed that locus is malleable with life-skill training alone, however, to mitigate the impact of adversity one needs to challenge beliefs in a stronger manner with role models. In addition, locus tends to be less malleable with age, therefore, an early start of such interventions amongst the children growing up under socioeconomic adversity is critical. Finally, in Chapter 4, I calculate the compensating variation of being an externally oriented adult when already marginalized, versus being internally oriented. For this I adopt the Leyden welfare approach. I measure utility using the Leyden Individual Welfare function. The data used was based on the household surveys conducted with mother of every child who participated in the randomized trial presented in Chapter 3. With 185 responses, I apply the Leyden Welfare approach and find the compensating variation of being externally oriented as 1.74 on income equivalence scale. Therefore, this thesis concludes with the idea that educational interventions like life-skill training being low-cost could be a potential tool in mitigating the impact of adversity on perseverance of children growing up under adverse socioeconomic conditions.

5.2. Challenges and potential avenues for future research

The present doctoral thesis was not possible without the overwhelming contributions in place in the literature as well as work in the other areas of knowledge outside economics. Anthropology, psychology and sociology helped putting in the right place the main hypothesis of the thesis. The present doctoral thesis was also impossible without the enthusiastic involvement of the NGO *(NGO name removed for confidentiality)*. However, finding this collaboration was one of the biggest challenges of the present doctoral thesis as

I required a collaborator who would be interested to find answers to the similar questions as myself and also be enthusiastically involved given limited budget and time.

While enormous efforts were made in order to dissipate possible biases, some of the key empirical challenges remained to be addressed, for which case one may want to consider them as potential avenues for future research. As one of the most relevant challenge is regarding the possibility of self-selection in Chapter 2. The response to the survey in Sample 1 was voluntary and there is a fair probability that the students who replied to the survey were the more active students or the ones who like participating in every opportunity. However, since the interest of the chapter was in analysing the relationship between locus of control and age, the coefficients of interest can be trusted. In addition, the study was carried out with a relatively smaller sample in a typical small town of West Bengal. Further studies that are conducted with larger and more diverse sample across the country can help in making generalizations about locus of control of children from India growing up in middle class families. In addition, though the aim was to compare the developmental trend of locus with age between marginalized and non-marginalized children, the data for the two samples were collected at different points in time. Therefore, further studies that constitute of data collected at the same point of time, same state, may lead to more rigorous results. In Chapter 3, considering the randomized trial was conducted with a fairly homogeneous sample the method of priming had to be adopted to create socioeconomic variation. Although the results are strong and significant, future research that is conducted with children across socioeconomic strata are desired from the perspective of external validity. It might also be interesting to capture the role of peer effect in influencing locus of control that was out of scope of this study. One alternative way to start making progress is to collaborate with an organization that work with children from both impoverished and well-off background and study the difference in developmental relationship of locus with age between the two groups. In addition, following such a sample across middle-school to high school years and recording the success of life-skill training in motivating perseverance in them would give a better perspective on an educational intervention like life-skill training and its role in mitigating the effect of adversity. In Chapter 4, the limitation was the lack of variation in gender. The household surveys were conducted with mothers only and therefore the compensating variation was calculated based on female responses only. I would also emphasize the relevance of digging more into the mechanism linking experience of socioeconomic adversity and perseverance. While the present thesis offered a possible evidence on this,

the effects validated with bigger samples would assist in designing careful interventions. Locus of control was explored as one of the suggestive channels that moderate the effect between socioeconomic adversity and perseverance, due to its direct connection with effort expended given an endeavour, however, further research is encouraged that are able to track real achievement outcomes amongst participants.

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Appendix A: Chapter 2

A.1. Sample Distribution

Grade	N	Mean Age (Yr.)	Female
School 1:			
4th	14	9.7	57%
5th	12	10.7	42%
6th	6	12.0	67%
7th	11	13.0	46%
8th	13	13.7	54%
9th	32	15.0	28%
10th	18	15.4	44%
Total	106	13.3	43%
School 2:			
6th	24	11.2	54%
7th	14	11.7	29%
8th	15	12.9	40%
9th	17	13.8	65%
10th	8	14.6	25%
Total	78	12.5	46%
Sample 1 (Overall):			
4th	14	9.7	57%
5th	12	10.7	42%
6th	30	11.4	57%
7th	25	12.2	36%
8th	28	13.3	46%
9th	49	14.6	41%
10th	26	15.2	39%
Total	184	13.0	45%
Sample 2 (School 3):			
4th	39	9.6	49%
5th	39	10.4	50%
6th	45	11.3	50%
7th	45	12.5	50%
8th	35	13.6	50%
9th	33	14.8	49%
Total	236	11.9	49%

School 01 : (School name removed for confidentiality)
School 02: (School name removed for confidentiality)
School 03: (School name removed for confidentiality)

A.2. Background Survey Questions

Questionnaire - Children

1. Age _____
2. Class _____
3. Gender – Male / Female
4. Religion ____
5. How many elder brothers do you have? ___
6. How many elder sisters do you have? _____
7. How many younger brothers do you have? ____
8. How many younger sisters do you have? ____
9. How many people live in your house? ____

10. Mother's Education level? School / College/ University/ Not educated
11. Mother's occupation _____
12. Mother's Monthly Income _____
13. Father's Education Level? School / College/ University/ Not educated
14. Father's occupation _____
15. Father's Monthly Income _____
16. Family Income _____

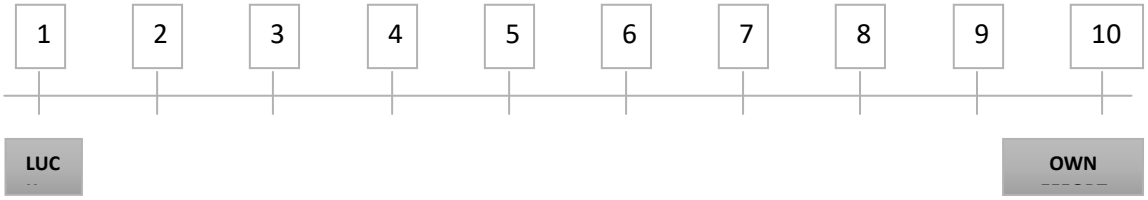
17. How often do you do your parents take note of your progress in school?
    a. Everyday
    b. Once a week
    c. Once a month
    d. When the results are out only
    e. Less than that
18. How often do your parents visit your school to find out if everything is going good?
    a. At least once in 3 months
    b. When called from school
    c. Never

19. Do you live in a rented/own house? Rented/ Own
20. How many bedrooms do you have in your house? ___
21. Do you have a bathroom in the house? Yes/ No
22. Do you have a separate room for cooking (kitchen)? Yes/ No
23. Is there electricity? Yes/ No

A.3. Locus of Control Questionnaire

Meet Hari… Hari's mother had passed away when he was just 5 years old, while giving birth to his sister….Hari has two sisters, Hari's father is old and sick…. Therefore, Hari has to earn for the family. He works as a gardener to earn his living, feed the family and save for his sister's marriage. Hari had attended school until class 3 and knows to read and write. He loves to read and wished he could complete his studies. Nevertheless, that seems too big a dream to be true in his life…

1. If Hari succeeds in life, would it be because of his own effort or will it be a matter of luck?



2. Hari works as a gardener in the house of a school teacher. When he got to know about Hari's love for books, he offered to teach Hari in the evening every day. However, for that Hari needs to finish work and then take out 2 hours every day in the evening and walk 2 Km to go to his house. What would you do if you were Hari?

   a. Leave dreams of completing education and work because when someone is born with a hard luck, there is no point in trying so hard.

   b. May be take the extra effort to go to the teacher in the evening because that might give an opportunity to fight the hard luck and fulfil dreams

   c. Definitely go to the teacher in the evening and complete education because hard work always wins over destiny.

3. Hari plans to send his sisters to school and not let them work or get them married off soon. What would you do if you were Hari?

   a. Would not bother to send sisters to school because when girls are born to families with so many difficulties, they would never have a good future how much ever they try. There is no point!

   b. Would send them to school because even the sisters should get a chance to build their future.

   c. It is a great thought and would definitely send them to school. Because however difficult it might be, hard work can overcome any obstacles.

4. Do you think that Hari has control over the direction his life will take?

   a. Definitely not
   b. No
   c. Not sure
   d. Yes
   e. Definitely yes

5. Do you really believe that any child, who faces difficulties in life like Hari, can be whatever he/ she wants to be?

   a. Definitely not
   b. No
   c. Not sure
   d. Yes
   e. Definitely yes

A.4. Locus of Control by Grade and School

Grade	School		Locus_Raw_Score
4.0	1	Mean	15.00
			1.88
	3	Mean	18.67
			2.38
5.0	1	Mean	18.42
			3.75
	3	Mean	17.05
			1.85
6.0	1	Mean	20.50
			3.94
	2	Mean	20.25
			2.80
	3	Mean	15.82
			2.34
7.0	1	Mean	23.27
			2.80
	2	Mean	19.79
			2.67
	3	Mean	15.89
			2.10
8.0	1	Mean	22.00
			2.08
	2	Mean	20.33
			3.31
	3	Mean	12.20
			2.08
9.0	1	Mean	20.50
			2.62
	2	Mean	20.18
			3.47
	3	Mean	12.06
			2.42
10.0	1	Mean	21.39
			1.88
	2	Mean	20.00
			2.07

Standard deviations are presented in italics

A.5. Locus of Control on Age, Ordinary Least Square Regressions (Sample 1)

(i) OLS Regression I

	(1)	(2)	(3)	(4)	(5)
Age	0.491	5.762	5.764	4.755	4.911
	(0.116)***	(1.363)***	(1.380)***	(1.431)***	(1.422)***
_ISchool_2		-0.264	-0.289	-0.216	-0.244
		(0.486)	(0.496)	(0.582)	(0.592)
Age^2		-0.204	-0.204	-0.164	-0.168
		(0.053)***	(0.053)***	(0.055)***	(0.055)***
Gender (female=1)			-0.021	-0.063	0.132
			(0.454)	(0.458)	(0.465)
First Born (=1)			0.130	-0.209	-0.038
			(0.452)	(0.474)	(0.479)
Mother Edu (=School)				0.315	0.474
				(1.400)	(1.392)
Mother Edu (=College)				-0.608	-0.360
				(1.446)	(1.441)
Mother Edu (=Uni)				-1.531	-1.432
				(1.601)	(1.595)
Mother_Employed (=1)				0.767	0.908
				(0.661)	(0.657)
Father Edu (=School)				0.506	0.157
				(1.748)	(1.737)
Father Edu (=College)				1.367	1.201
				(1.763)	(1.748)
Father Edu (=Uni)				2.544	2.288
				(1.876)	(1.857)
parents_tk_note (once/month)				-1.255	-1.274
				(0.652)**	(0.653)**
parents_tk_note (once/ week)				-0.132	0.193
				(0.788)	(0.793)
parents_tk_note (everyday)				-0.217	0.035
				(0.596)	(0.601)
parents_sch_vst (when called)				-1.005	-1.158
				(0.849)	(0.847)
parents_sch_vst (1/3 months)				0.301	0.040
				(0.871)	(0.868)
Religion (=Hindu)					0.753
					(1.521)
Religion (=Muslim)					3.928
					(3.319)
Family Size					0.008
					(0.102)
Occupancy Rate					0.264
					(0.160)
Constant	13.761	-19.424	-19.478	-13.539	-16.404
	(1.528)***	(8.616)**	(8.692)**	(9.089)	(9.250)*
Number of obs	184	184	184	183	181
Adj. R-squared	0.085	0.149	0.139	0.167	0.184

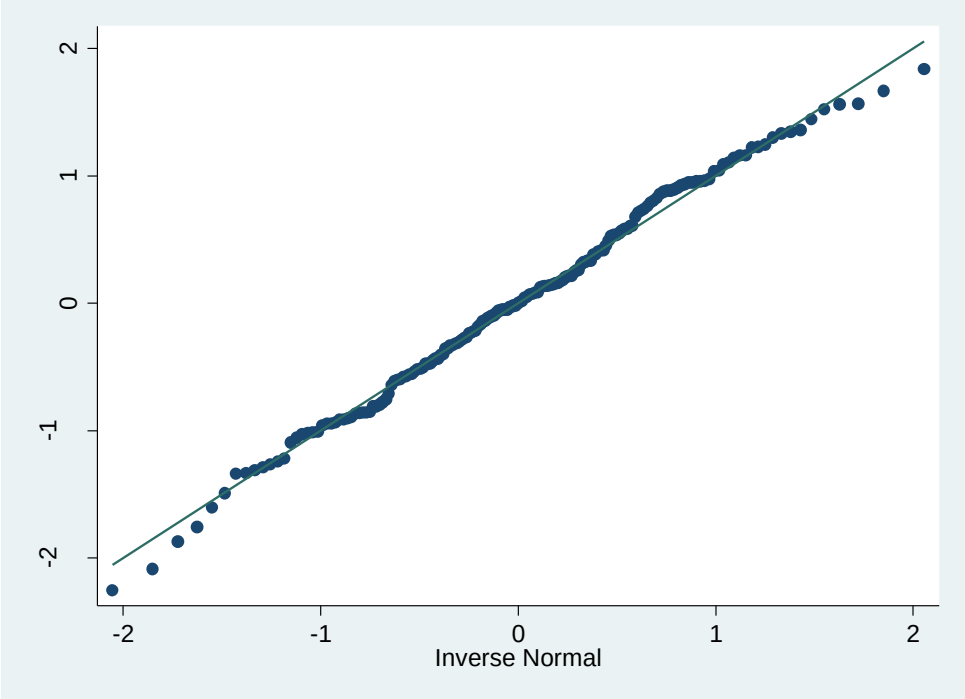
Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Omitted Variables: parents_tk_note (never); Religion: Christian; Mother Edu None; Father Edu None

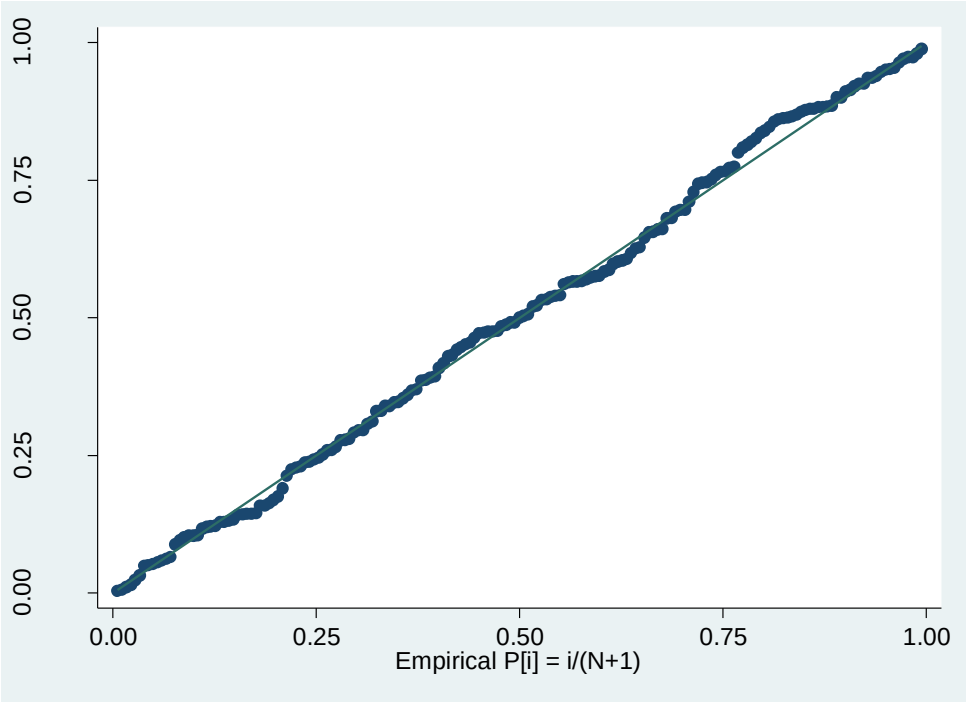
(ii) OLS Regression II

	(1)	(2)	(3)	(4)
Age	0.140	0.619	-0.419	-0.276
	(0.228)	(1.749)	(1.785)	(1.774)
_IGrade_5	3.283	3.443	3.618	3.814
	(1.143)***	(1.213)***	(1.268)***	(1.256)***
_IGrade_6	5.063	6.529	6.734	6.856
	(1.000)***	(1.335)***	(1.372)***	(1.368)***
_IGrade_7	5.960	7.266	7.681	7.951
	(1.117)***	(1.519)***	(1.568)***	(1.558)***
_IGrade_8	5.611	7.132	7.391	7.414
	(1.233)***	(1.709)***	(1.764)***	(1.746)***
_IGrade_9	4.703	6.41	7.084	7.101
	(1.408)***	(1.821)***	(1.857)***	(1.852)***
_IGrade_10	5.193	7.072	7.389	7.651
	(1.566)***	(1.934)***	(1.971)***	(1.949)***
_ISchool_2		-1.525	-1.346	-1.257
		(0.548)***	(0.606)**	(0.599)**
Age^2		-0.029	0.008	0.005
		(0.064)	(0.065)	(0.064)
Gender (female=1)		0.149	0.117	0.359
		(0.432)	(0.433)	(0.436)
First Born (=1)		0.091	-0.260	-0.067
		(0.438)	(0.46)	(0.457)
Mother Edu (=School)			0.095	0.386
			(1.324)	(1.305)
Mother Edu (=College)			-0.278	0.097
			(1.369)	(1.355)
Mother Edu (=Uni)			-1.612	-1.349
			(1.516)	(1.500)
Mother_Employed (=1)			0.464	0.582
			(0.626)	(0.617)
Father Edu (=School)			0.339	-0.142
			(1.671)	(1.644)
Father Edu (=College)			0.744	0.445
			(1.675)	(1.646)
Father Edu (=Uni)			1.816	1.466
			(1.781)	(1.747)
parents_tk_note (once/month)			-0.791	-0.689
			(0.631)	(0.627)
parents_tk_note (once/ week)			0.367	0.727
			(0.759)	(0.756)
parents_tk_note (everyday)			-0.279	0.026
			(0.570)	(0.569)
parents_sch_vst (when called)			-1.278	-1.452
			(0.803)	(0.794)*
parents_sch_vst (1/3 months)			0.211	-0.129
			(0.824)	(0.814)
Religion (=Hindu)				0.028
				(1.499)
Religion (=Muslim)				2.960
				(3.155)
Family Size				0.019
				(0.098)
Occupancy Rate				0.350
				(0.152)**
Constant	13.636	11.633	18.463	15.891
	(2.341)***	(11.073)	(11.451)	(11.766)
Number of obs.	184	184	183	181
Adj. R-squared	0.226	0.244	0.269	0.298

Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels; Omitted Variables: parents_tk_note (never); Religion: Christian; Mother Edu None; Father Edu None

(iii) **Standardized normal probability plot OLS Regression II (Ordinary Least Square)**





A.6. Ordered Logit Full Regression III Results (Sample 1)

	(1)	(2)	(3)	(4)	(5)
Age	1.091	1.093	3.234	2.908	2.634
	(0.146)***	(0.143)***	(0.381)***	(0.837)***	(0.489)***
_IGrade_5	23.600	23.713	21.424	24.561	28.628
	(2.698)***	(2.598)***	(2.129)***	(6.331)***	(9.767)***
_IGrade_6	14.991	17.139	13.267	23.451	25.002
	(10.726)	(11.842)	(8.713)	(17.149)	(15.972)
_IGrade_7	6.046	10.487	4.645	8.982	10.794
	(6.324)	(5.380)*	(7.844)	(3.830)**	(2.717)***
_IGrade_8	11.157	16.990	8.420	13.775	14.465
	(6.283)*	(8.327)**	(11.569)	(6.803)**	(8.351)*
_IGrade_9	15.210	18.226	4.218	10.212	14.125
	(2.762)***	(0.327)***	(3.834)	(1.628)***	(0.720)***
_IGrade_10	11.470	14.124	-1.345	3.293	6.456
	(4.567)**	(2.233)***	(1.730)	(2.833)	(0.444)***
Age*grade_5	-2.094	-2.103	-1.877	-2.187	-2.559
	(0.249)***	(0.241)***	(0.183)***	(0.548)***	(0.887)***
Age*grade_6	-1.182	-1.309	-0.947	-1.870	-1.988
	(0.936)	(1.065)	(0.782)	(1.489)	(1.391)
Age*grade_7	-0.366	-0.688	-0.159	-0.557	-0.692
	(0.600)	(0.496)	(0.712)	(0.409)	(0.314)**
Age*grade_8	-0.835	-1.244	-0.505	-1.006	-1.072
	(0.484)*	(0.615)**	(0.884)	(0.511)**	(0.610)*
Age*grade_9	-1.162	-1.346	-0.215	-0.750	-1.055
	(0.218)***	(0.075)***	(0.243)	(0.075)***	(0.111)***
Age*grade_10	-0.904	-1.060	0.162	-0.290	-0.533
	(0.314)***	(0.184)***	(0.116)	(0.149)*	(0.098)***
_ISchool_2		-0.852	-0.827	-0.699	-0.655
		(0.109)***	(0.181)***	(0.513)	(0.375)*
Age^2			-0.108	-0.078	-0.059
			(0.014)***	(0.025)***	(0.008)***
Gender (female=1)			0.032	-0.040	0.107
			(0.143)	(0.216)	(0.225)
First Born (=1)			0.104	-0.114	0.022
			(0.165)	(0.032)***	(0.092)
Mother Edu (=School)				0.526	0.778
				(1.090)	(0.760)
Mother Edu (=College)				0.239	0.521
				(0.508)	(0.246)**
Mother Edu (=Uni)				-0.756	-0.569
				(0.366)**	(0.540)
Mother_Employed (=1)				0.297	0.340
				(0.064)***	(0.048)***
Father Edu (=School)				0.553	0.250
				(0.186)***	(0.429)
Father Edu (=College)				0.723	0.528
				(0.041)***	(0.390)
Father Edu (=Uni)				1.421	1.303
				(0.285)***	(0.872)
parents_tk_note (once/month)				-0.597	-0.475
				(0.116)***	(0.216)**
parents_tk_note (once/ week)				0.363	0.636
				(0.703)	(0.702)
parents_tk_note (everyday)				-0.164	0.060
				(0.416)	(0.468)
parents_sch_vst (when called)				-0.890	-1.038
				(0.580)	(0.557)*
parents_sch_vst (1/3 months)				0.249	-0.028
				(0.410)	(0.213)
Religion (=Hindu)					-0.642
					(0.421)
Religion (=Muslim)					1.286
					(0.329)***
Family Size					0.029
					(0.071)
Occupancy Rate (ppl/room)					0.252
					(0.112)**
No of Observations	184	184	184	183	181
Pseudo R2	0.064	0.070	0.071	0.096	0.109

A.7. Consent Form

University of Glasgow
College of Social Sciences

Consent Form

Title of Project: ……Age differences in locus of control…….

Name of Researcher: ……Seemanti Ghosh…….

I confirm that I have read and understood the Plain Language Statement for the above study and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without any repercussions.

I consent / do not consent (delete as applicable) to interviews being audio-recorded.

I acknowledge that participants will be referred to by pseudonym.

I acknowledge that there will be no effect on my grades arising from my participation or non-participation in this research.

- All names and other material likely to identify individuals will be anonymised.
- The material will be treated as confidential and kept in secure storage at all times.
- The material will be retained in secure storage for use in future academic research
- The material may be used in future publications, both print and online.
- I understand that other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.
- I understand that other authenticated researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant ……

Signature ……..

Date ……

Name of Parent/carer ……

Signature ……..Date ……

Name of Researcher ……

Signature ……..

Date ……

A.8. Plain Language Statement: Children

University of Glasgow
College of Social Sciences

Participant Information Sheet – Children

Title of project and researcher details

Locus of Control and its difference with age
Researcher: Ms Seemanti Ghosh (Telephone - 0141 330 4940)
Degree: PhD (Economics)
Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb
Course: PhD (Economics)

You are being invited to take part in a research project along with all the other students in your class. A research project is a way to learn more about something.

Before you decide if you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the information on this page carefully and discuss it with others in the class and your parents/guardian if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?
The purpose of the study is to understand how you perceive your control over various outcomes in life

Why have I been chosen?
You have been chosen to participate in this research because you fall in the age group this study is designed for and your school has been chosen to collaborate with us on this research.

Do I have to take part?
You do not have to take part in this study, and if you decide not to, or if your parent/carer does not want you to take part, you will still be part of the class exactly the same as you are now. If, after you have started to take part, you change your mind, just let me know and I will not use any information you have given me in my writing. You can withdraw at any time without repercussions and the material would not be used for research purpose and would be discarded.

What will happen to me if I take part?
If you decide to take part, your class teacher would ask you to fill out a survey form. You do not have to answer any questions that you don't want to. The survey would approximately take 30 minutes but you would not require spending any extra time apart from your school hours. You will not be required to reveal any information for the purpose of the research that you would not otherwise do.

Will the information that I give you in this study be kept confidential (private)?
I will keep all the information that you provide through surveys lock in a cabinet or computer that is password locked. When I have finished writing my study I will destroy all the information. Also, since the data would not contain your name, no one will be able to identify you through the data. The data will be collected by the class teachers and hence the teachers would have access to the data. They would hand over the data to me at the venue. Beyond that, the data would not be shared with anyone. Other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as mentioned. However, if through the responses you provide, anything makes me worried that you might be in danger of harm, I might have to tell other people who need to know about this.

What will happen to the results of this study?
The results of the study will help everyone understand how one's sense of control develops with age. The data would be used to write an academic paper that is expected to be published any time after September 2017. You can obtain a copy of the results from your school head teacher. The data besides being used in publication could be used for reports, web pages, and other research outputs.

Who has reviewed the study?
This research is being funded by the University of Glasgow, UK and the project has been reviewed by the College of Social Sciences Research Ethics Committee.

Who can I contact for further Information?
If you have any concerns regarding the conduct of the research project, you can contact the College Ethics Officer by contacting Dr. Muir Houston at muir.houston@glasgow.ac.uk. If you need any further information please contact the researcher Seemanti Ghosh at s.ghosh.1@research.gla.ac.uk.

Thank you for reading this.

A.9. Plain Language Statement: Parents

University of Glasgow
College of Social Sciences

Participant Information Sheet - Parents

Title of project and researcher details

Age differences in Locus of Control
Researcher: Ms Seemanti Ghosh (Telephone - 0141 330 4940)
Degree: PhD (Economics)
Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb
Course: PhD (Economics)

Your child is being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish your child to take part. Thank you for reading this.

The aim of the study is to see how Locus of Control (An attribute of one's personality) changes with age. Data for the research study would be collected during the school hours. Your child has been chosen to participate in this study since the school has decided to collaborate with us. Every other student in the school has been invited to participate in this research study too. There is no potential risk to your child on participation since it does not require any activity that could harm your child physically or psychologically or change any part of your child's daily routine. It is up to you to decide whether or not to allow your child to take part. If you decide to allow your child to take part you are still free to withdraw at any time and without giving a reason. A decision of not to participate would not impact your child's grades anyway.

What will happen if you take part?
If you decide to allow your child to participate, your child's schedule would remain the same. During the school hours, the class teacher would request your child to fill out a survey form. Your child would not be expected to spend any longer than 30 minutes filling out the form. However, your child can withdraw at any time without repercussions and the material would not be used for research purpose.

Keeping information confidential (private)
All information, which is collected about your child during the course of the research, will be kept strictly confidential in a locked cabinet or in a locked file on my computer.When I have finished writing my study I will destroy all the information. Your child will be identified by an ID number and any information about your child will have his/her name and address removed so that your child cannot be recognised from it. The data will be collected from your child by the class teachers and hence the teachers would have access to the data. They would hand over the data to me at the venue. Beyond that, the data would not be shared with anyone. Other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as mentioned. However, if during the study if I hear anything which makes me worried that your child might be in danger of harm, I might have to tell other people who need to know about this.

The results of this study
The results of the research study will help you to understand in general how locus of control shapes amongst children. Since locus of control is an important attribute of personality, it would be of advantage to you and any other parent to understand with age how their child's locus might shape. The results are expected to be published any time after September 2017. You can obtain a copy of the results from the school head teacher. The data besides being used in publication could be used for reports, web pages, and other research outputs.

Review of the study

This research is being funded by the University of Glasgow, UK and the project has been reviewed by the College of Social Sciences Research Ethics Committee.

Contact for further Information

If you have any concerns regarding the conduct of the research project, you can contact the College Ethics Officer by contacting Dr. Muir Houston at muir.houston@glasgow.ac.uk.If you need any further information please contact the researcher Seemanti Ghosh at s.ghosh.1@research.gla.ac.uk.

A.10. Variable Description

Variable	Description
School_1	*(School name removed for confidentiality)* School in West Bengal; part of Sample 1
School_2	*(School name removed for confidentiality)* in West Bengal; part of Sample 1
First Born (=1)	First born child
Mother Edu (=School)	Mother is educated until school level
Mother Edu (=College)	Mother is educated until college level
Mother Edu (=Uni)	Mother is educated until University level
Mother Edu (=None)	Mother has no education
Mother_Employed (=1)	Mother is employed
Father Edu (=School)	Father is educated until school level
Father Edu (=College)	Father is educated until college level
Father Edu (=Uni)	Father is educated until University level
Father Edu (=None)	Father has no education
parents_tk_note (once/month)	Parents take of child's study once per month
parents_tk_note (once/ week)	Parents take of child's study once per week
parents_tk_note (everyday)	Parents take of child's study everyday
parents_tk_note (never)	Parents never take of child's study
parents_sch_vst (when called)	Parents visit school when called
parents_sch_vst (1/3 months)	Parents visit school once every month
parents_sch_vst (never)	Parents never visit school
Religion (=Hindu)	Religion of the child and family is Hindu
Religion (=Muslim)	Religion of the child and family is Muslim
Religion (=Christian)	Religion of the child and family is Christian
Family Size	Total number of people in the house
Occupancy Rate	No. of people/ No. of bedroom
_IGrade_5	Child is in Grade 5
_IGrade_6	Child is in Grade 6
_IGrade_7	Child is in Grade 7
_IGrade_8	Child is in Grade 8
_IGrade_9	Child is in Grade 9
_IGrade_10	Child is in Grade 10

Appendix B: Chapter 3

B.1. Baseline Results, Routine Data collected by NGO, ordered logit

	Interact Other	ProblemSolving	Take Initiative	Manage Conflict	Follow Instruction
Age	0.664	0.439	0.269	0.585	0.39
	(0.122)***	(0.193)**	(0.257)	(0.215)***	(0.148)***
Gender	0.581	0.374	-0.153	0.082	0.68
	(0.233)**	(0.221)*	(0.231)	(0.327)	(0.205)***
NGO Year2	0.904	-1.898	-1.24	-0.202	-0.259
	(0.607)	(1.181)	(0.715)*	(0.828)	(0.69)
NGO Year3	0.612	-2.273	-0.882	-0.608	-0.141
	(0.433)	(0.928)**	(0.742)	(0.854)	(0.568)
NGO Year4	-0.309	-2.365	-0.933	-1.417	-1.171
	(0.521)	(0.629)***	(0.589)	(0.653)**	(0.924)
_IGrade_5	-1.967	1.696	1.647	-0.351	-0.086
	(0.647)***	(1.027)*	(0.629)***	(0.88)	(0.674)
_IGrade_6	-0.846	3.613	3.502	0.721	1.394
	(0.265)***	(0.877)***	(0.791)***	(0.917)	(0.764)*
_IGrade_7	-1.56	1.369	1.13	-1.555	-0.207
	(0.23)***	(0.76)*	(0.721)	(1.212)	(0.9)
_IGrade_8	-1.709	2.2	2.632	-0.095	1.191
	(0.264)***	(0.875)**	(0.871)***	(1.264)	(1.262)
_IGrade_9	-2.312	2.293	1.827	-0.253	0.478
	(0.373)***	(1.089)**	(1.134)	(1.526)	(1.332)
Pseudo R2	0.0846	0.1338	0.1542	0.1183	0.1208
N	230	230	230	230	230

*Note: Standard errors in parenthesis; *, ** and *** implies significance at the 10%, 5% and 1% levels*

B.2. *(NGO name removed for confidentiality)* Life Skills Assessment Scale used for Baseline

(NGO name removed for confidentiality) Life Skills Assessment Scale (DLSAS)

Please complete this scale while observing, or as soon as possible after observing, the child. You may need to spend some time observing before you decide on your rating. Do not spend too long thinking about each question, just record your impression. For each question, consider age appropriateness (think of actual age, rather than physical appearance).

Mark the most relevant number in the boxes for each question. The comments box can be used to provide example observations that helped you to decide on your rating, or for other comments.

Name of child	Gender	Name of assessor
Actual age	How old does the child look?	Is the child having difficulty working in a language other than his/her native language?

	Does not yet do	Does with lots of help	Does with some help	Does with a little help	Does independently
IO. Interacting with others For example, does X interact appropriately with peers, staff, opposite sex? Does X communicate effectively? Does X show sensitivity to others' needs and feelings?	1	2	3	4	5
Comments					
DP. Overcoming difficulties and solving problems For example, does X find a way around obstacles that arise? Does X ask for help appropriately? Does X solve problems successfully?	1	2	3	4	5
Comments					
TI. Taking initiative For example, does X carry out tasks without being told? Does X show age-appropriate leadership?	1	2	3	4	5
Comments					
MC. Managing conflict For example, does X show appropriate assertiveness? Does X resolve disagreements appropriately? Does X accept appropriate discipline? Does X do this without violence or foul language or running away?	1	2	3	4	5
Comments					
UI. Understanding and following instructions Does X understand appropriate instructions when given? Does X comply with instructions? Does X ask for clarification when needed?	1	2	3	4	5
Comments					
OS. FOR THE OVERALL SCORE, ADD ALL ITEMS AND DIVIDE BY 5	1	2	3	4	5
Comments					

Kennedy, F., Pearson, D., Brett-Taylor, L. & Talreja, V. (2014). The Life Skills Assessment Scale: Measuring life skills in disadvantaged children in the developing world. *Journal of Social Behavior and Personality: An international journal, Vol 42, No 2 (2014)*

B.3. Sampling Allocation by Grade & Priming

		TG0	TG1	TG2	Sub totals	Total
4th	Primed	8	6	6	20	39
	No Prime	7	6	6	19	
5th	Primed	6	7	7	20	40
	No Prime	6	7	7	20	
6th	Primed	10	7	7	24	48
	No Prime	10	7	7	24	
7th	Primed	6	8	8	22	45
	No Prime	7	8	8	23	
8th	Primed	6	7	7	20	39
	No Prime	5	7	7	19	
9th	Primed	4	6	6	16	33
	No Prime	5	6	6	17	

B.4. Field Programme Calendar

Programme	Date
Baseline survey, Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task (All Grades)	January 7th 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 4th Grade	January 18th 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 5th Grade	January 19th 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 6th Grade	January 20th 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 7th Grade	January 21st 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 8th Grade	January 22nd 2016
Priming (Activity - Appendix B.7), Remedial Intervention (Activity-Appendix B.8), Data collection on outcome variables using Questionnaire Appendix B.9 & Effort-Chance task - 9th Grade	January 25th 2016

B.5. Timeline of Activities on 18th, 19th, 20th, 21st, 22nd and 25th January 2016

Begins – First 15 minutes	Participants are given a badge. Participants divide themselves in 2 groups according to the BADGE COLOUR (Red- Priming / Blue- Neutral Priming). Red & Blue do not interact beyond this point		
Next 45 minutes	Priming Activity 1 (story reading for 5 minutes– Appendix B.6) & 2 (scrambled sentence game for 40 minutes – Appendix B.7) (Red & Blue separately)		
Next 5 minutes	The above two groups are dismantled and participants divide themselves in 3 groups according to the Sampling Allocation (Their badges will have the Group number on them). Since they immediately would be in the remedial treatment group, they would not get any chances of interaction. Chances of interaction is minimal because under treatment condition the trainer will be speaking with them and engaging them.		
Next 45 minutes	Art Class(Placebo)	Treatment Life-skill Training only (RTG1)	Treatment Life-skill Training and Role Model (RTG2)
Last 45 minutes	Questionnaire & Effort-Chance Task		

B.6. Priming Activity 1: Story Reading (5 minutes)

A. Adversity Priming story

Photograph: (instablogs)

Mita is the second daughter of Keshav and Poornima. Mita is 14 years old. Mita's father works as a daily labour. Mita's mother sells flower outside temple. Mita has three sisters and one brother. Mita's elder sister was not allowed to school and married at 15. Mita has a family of six members. Mita's father earns Rs.300 per day. They live in a small hut in one of the slums. There is no bathroom or kitchen in the house. Six people cook and sleep in the same room. Mita's village does not have electricity. Drinking water facilities is a problem for her village. Mita cooks for the family. Mita's brother goes to school. When there is no food, Mita sleeps hungry. Mita accompanies her mother to sell flowers. Mita has a dream. She wants to go to school. Mita does stitching. Mita had a red frock. Mita's father is looking for a groom for Mita. Mita does not want to get married. Mita wishes to study and work. Girls should be given education. Mita wants to buy new dress for festival. Mita does not have money to buy a new dress. All the girls in the village avoid Mita because she is illiterate. Mita does not like when her parents quarrel over money. Mita has no friends.

B. Neutral Priming story

India is a vast country with second highest population in the world. It is a country with diverse cultures, traditions and beliefs. People in India celebrate unity in diversity. Festivals like Diwali, Holi, Navratri, Ramzan, Christmas etc. are celebrated by people across India and create a sense of brotherhood and cultural unity. Each festival has its religious and cultural importance. India is the land of diverse people belonging to various religions and speaking different languages. Our national language is Hindi. However, there are 22 different official languages spoken in India. It is the birth place of religions such as Hinduism, Buddhism, Jainism, and Sikhism. People in India have diverse dressing styles, different food habits and customs that differ from place to

B.7. Priming Activity 2: Scrambled Sentence Game (40 minutes)

A. Questions

Adversity Priming (Question)	Neutral Priming (Question)
hungry sky blue is	is blue tree sky
old, years mita failure is 14	roses food are red
gutter are red, roses	trees white milk is
broken father works labour, as mita's a daily	blows green wind land the across
mita's temple, flower mother outside sells tree	rains rainy season the egg in it
blows across wind meagre land, the	the is wheel turning sour
of abandoned a has , six mita family	grow in soil boy plants
in rains poverty the it rainy season,	boy old ram year tree a is 14
in small of slums, in a live one they the hardship hut	two grass brothers has ram
brothers, misery two ram has	ram and are ship shyam friends
electricity, village dirty not does mita's have	in east sun west the the rises
neglected of delhi india, the is capital	is capital the dance of delhi india
mita family, the for failure cooks	green sink are trees
are woe green, trees	revolves the the sun around water earth
mita's goes to brother school, suffering	national nepal sport hockey the india of is
the sun, the around bankrupt earth revolves	is tennis bathroom sania mirza a player
sleeps there hungry food when no mita is	has cricket team 31 11 players the
sand and water, mix shortage you cannot	sugar you and cannot mix sand water
sania mirza is unemployed player, a tennis	grass eats meat cow
debt a is he coat, wearing	coat he is wearing goat a
for exercise is cluttered good health,	elder ram cycle brother an has
mother accompanies her mita to sell deficit flowers,	bright blue sun shines
with penniless pencil, write i	exercise for wealth health good is
cow a has legs, four poor	pencil write with i book
none, and malnutrition time for tide wait	the keep on book the table frog
illiterate in sun sets the west,	bag my are there in cows two pencils
dangerous a thing, little knowledge is a inequality	cow four a legs two has
tiger lack carnivorous, is	tiger carnivorous cow is
sets in deprived west, sun the	a soil hot beverage is tea
please shabby open the door,	time for clock tide none and wait
the table, child labour please the book on keep	is thing knowledge life little a a dangerous
broken-down does mita stitching,	the sun in sets west east
had mita red a worn-out frock,	team game single football a is
study to mita child work, wishes and marriage	door tree please the open
powerless the birds chirping, are	please keep the human the table on book
buy dress mita wants new despair festival, to for	the is tiger farmer farming
have does money buy belittle mita to not dress, new a	very water the wide road is
wall, the painter painting the on demean is	roaring are birds chirping the
world, there are seven continents abuse the in	the are singing barking dogs
eating, your scanty wash before hands	green the colour sound trees
cow pauper grass, eats	song the the painter on is wall painting
ram an elder brother, has needy	hari is cycle a book reading
in sun low east, the rises	seven the country in world there continents are
game, a is football excluded	the pour water in the sweater glass
are leaves green, disadvantaged	singing eating hands before wash your

B. Answers

Adversity Priming	Neutral Priming
Sky is blue, hungry	Sky is blue, tree
Mita is 14 years old, failure	Roses are red, food
Roses are red, gutter	Milk is white, trees
Mita's father works as a daily labour, broken	Wind blows across the land, green
Mita's mother sells flower outside temple, tree	It rains in the rainy season, egg
Wind blows across the land, meagre	The wheel is turning, sour
Mita has a family of six , abandoned	Plants grow in soil, boy
It rains in the rainy season, poverty	Ram is a 14 year old boy, tree
They live in a small hut in one of the slums, hardship	Ram has two brothers, grass
Ram has two brothers, misery	Ram and Shyam are friends, ship
Mita's village does not have electricity, dirty	The sun rises in the east, west
Delhi is the capital of India, neglected	Delhi is the capital of India, dance
Mita cooks for the family, failure	Trees are green, sink
Trees are green, woe	The earth revolves around the sun, water
Mita's brother goes to school, suffering	Hockey is the national sport of India, Nepal
The earth revolves around the sun, bankrupt	Sania Mirza is a tennis player, bathroom
When there is no food Mita sleeps hungry	The cricket team has 11 players, 31
You cannot mix sand and water, shortage	You cannot mix sand and water, sugar
Sania Mirza is a tennis player, unemployed	Cow eats grass, meat
He is wearing a coat, debt	He is wearing a coat, goat
Exercise is good for health, cluttered	Ram has an elder brother, cycle
Mita accompanies her mother to sell flowers, deficit	Sun shines bright, blue
I write with pencil, penniless	Exercise is good for health, wealth
A cow has four legs, poor	I write with pencil, book
Time and tide wait for none, malnutrition	Keep the book on the table, frog
Sun sets in the west, illiterate	There are two pencils in my bag, cows
A little knowledge is a dangerous thing, inequality	A cow has four legs, two
Tiger is carnivorous, lack	Tiger is carnivorous, cow
Sun sets in the west, deprived	Tea is a hot beverage, soil
Please open the door, shabby	Time and tide wait for none, clock
Please keep the book on the table, child labour	A little knowledge is a dangerous thing, life
Mita does stitching, broken-down	Sun sets in the west, east
Mita had a red frock, worn-out	Football is a team game, single
Mita wishes to study and work, child marriage	Please open the door, tree
The birds are chirping, powerless	Please keep the book on the table, human
Mita wants to buy new dress for festival, despair	The farmer is farming , tiger
Mita does not have money to buy a new dress, belittle	The road is very wide, water
The painter is painting on the wall, demean	The birds are chirping, roaring
There are seven continents in the world, abuse	The dogs are barking, singing
Wash your hands before eating, scanty	Colour the trees green, sound
Cow eats grass, pauper	The painter is painting on the wall, song
Ram has an elder brother, needy	Hari is reading a book, cycle
Sun rises in the east, low	There are seven continents in the world, country
Football is a game, excluded	Pour the water in the glass, sweater
Leaves are green, disadvantaged	Wash your hands before eating, singing

B.8. 'River-of-Life' Module from *(NGO name removed for confidentiality)*

This is a reflection exercise. There will be no judgement about your artistic abilities! Your completed river will not be displayed. It will continue to serve as a personal reflection tool on your discernment journey. In creating your river, please use whatever supplies you need. Materials needed: crayons, coloured pencils, paper, pen, pencil, music to play while they draw

Before you put anything on paper, think briefly about the course of your whole life and reflect on these questions, which frame this exercise: (10 mins)

• If you were able to compare your life with a river, what would the river look like? When and where are the smooth, flowing waters – those times when everything good is happening and there is ease in your life? Write down five items. For example, if you have ranked in class, received a gift, or went for a good holiday, saw a new place, got any award, won any competition, any experiences that you can remember relating to good/happy.

• When does the river take a sudden turn (and what caused the turn), or change from smooth waters to rough, tumbling rapids or to an excited rush of water? Write down five such unhappy/difficult events of your life in this sudden turns of life. For example, bad grades, punishment from guardian, any bereavement, failure at any endeavour, family problems, etc.

• Are there rocks or boulders falling into your river – unexpectedly landing there, changing its direction forever? Spot the five biggest challenges of your life according to you and write them down.

• Are there points at which it flows powerfully and purposefully or seems to slow to a trickle? Write down two instances each of success or failure. For example, you got excellent grades, or failed an exam, or could not appear for an exam, or won a competition.

1. Begin with a blank sheet of paper. Draw your river of life: (10 mins)
    - Draw the smooth water
    - Draw the bends and turns
    - Draw the boulders/rocks
    - Draw the rough/forceful waters that leads to changing course of the river
    - With Words/Symbols represent the points you wrote in 1 on your drawing

2. Rivers do not exist in isolation but are always part of a larger ecology. So, too, is human life situated in a larger world. What was going on in the world – family, surroundings, local, soicial factors – that shaped the flow of YOUR river? Using words/symbols place them on your river. (5 mins)

3. As you look at YOUR river, think about the following with respect to YOUR CONTROL over your life outcomes: Main Reflection (20 mins)

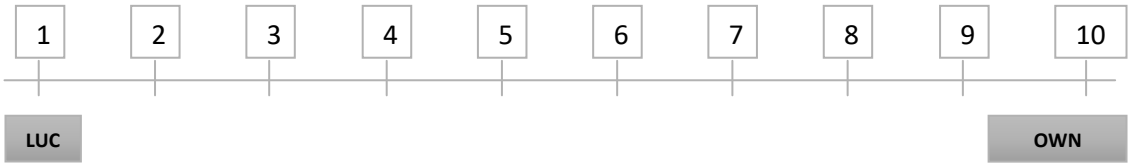
    - In the smooth phases of your life, do you believe you felt sufficient CONTROL over the outcomes in your life?
    - Or, would you assign the smooth phases to chance?
    - If you think you were in CONTROL of the smooth phases of your life, then reflect on the ACTIONS you took to be in control of those good outcomes.
    - If you think the good phases happened only by chance, THINK AGAIN and try to recollect if there were any action that you may have taken that could have influenced the outcome (that you are assuming to be by chance!). For example, you may be thinking that you won the race by chance but may be it is because of the recent increased physical activity level that you have had.
    - Now reflect of the rough/difficult outcomes of your life – do you think they were influenced by the external factors you placed on your river in point 4 or the boulders of your life?
    - Reflect on the boulders of your life. Do you think if you decide to take CONTROL of the direction in which your river flows in, you could resent the effect of boulders? Focus of actions you could take to take CONTROL!
    - What if the boulders are very strong and you fail to fight them? Here the instructors emphasize the significance of making the force of one's actions stronger than the force of obstacle. The instructor gives example, if I give you a hard stick that you are not able to break, if you keep applying force in the right angle, would it/not break at some point? The instructor carries a stick along and gives demo!
    - The instructor concludes by helping the participants understand from their own reflective analysis the importance of channelling one's primary energy towards taking CONTROL of the flow of their own river because "who we are today is a result of our choices"

4. The instructor asks – "If you could take away one phrase from today's session, what would that be?" He prompts the participants but lets them say "taking control of our river". Write this on your river!

B.9. Locus of Control Questionnaire

Meet Hari… Hari's mother had passed away when he was just 5 years old, while giving birth to his sister….Hari has two sisters, Hari's father is old and sick…. Therefore, Hari has to earn for the family. He works as a gardener to earn his living, feed the family and save for his sister's marriage. Hari had attended school until class 3 and knows to read and write. He loves to read and wished he could complete his studies. Nevertheless, that seems too big a dream to be true in his life…

1. If Hari succeeds in life, would it be because of his own effort or will it be a matter of luck?



2. Hari works as a gardener in the house of a school teacher. When he got to know about Hari's love for books, he offered to teach Hari in the evening every day. However, for that Hari needs to finish work and then take out 2 hours every day in the evening and walk 2 Km to go to his house. What would you do if you were Hari?

   a. Leave dreams of completing education and work because when someone is born with a hard luck, there is no point in trying so hard.

   b. May be take the extra effort to go to the teacher in the evening because that might give an opportunity to fight the hard luck and fulfil dreams

   c. Definitely go to the teacher in the evening and complete education because hard work always wins over destiny.

3. Hari plans to send his sisters to school and not let them work or get them married off soon. What would you do if you were Hari?

   a. Would not bother to send sisters to school because when girls are born to families with so many difficulties, they would never have a good future how much ever they try. There is no point!

   b. Would send them to school because even the sisters should get a chance to build their future.

   c. It is a great thought and would definitely send them to school. Because however difficult it might be, hard work can overcome any obstacles.

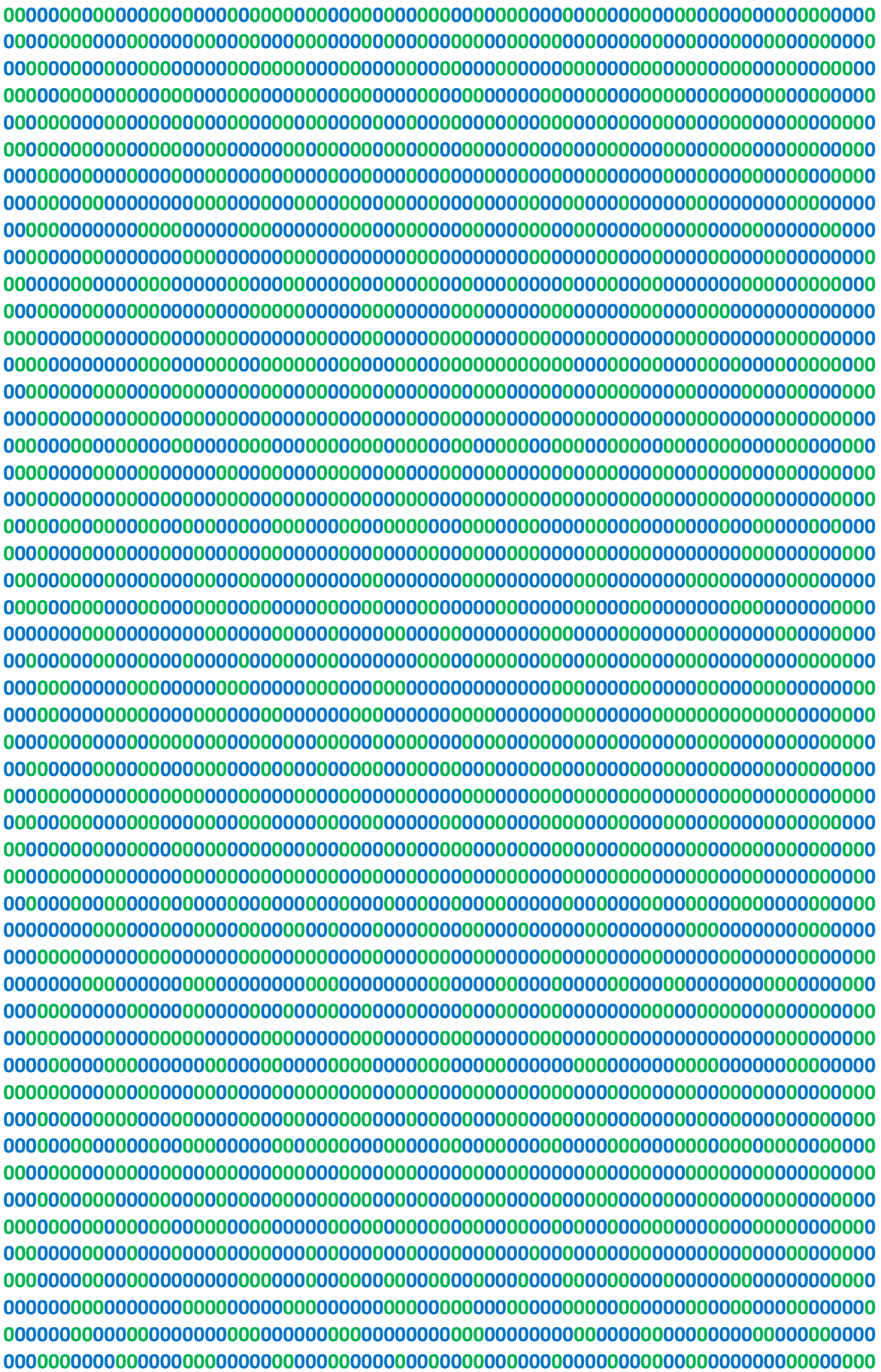
4. Do you think that Hari has control over the direction his life will take?

   a. Definitely not
   b. No
   c. Not sure
   d. Yes
   e. Definitely yes

5. Do you really believe that any child, who faces difficulties in life like Hari, can be whatever he/ she wants to be?

   a. Definitely not
   b. No
   c. Not sure
   d. Yes
   e. Definitely yes

B.10. Effort-Task: Challenge Sheet



B.11. Effort-Task: Levels of Challenge

Levels	Challenge	Timing
Level 1	Count 15 blue zeros	15 seconds
Level 2	Count 20 blue zeros	20 seconds
Level 3	Count 30 blue zeros	30 seconds
Level 4	Count 15 blue zeros	12 seconds
Level 5	Count 20 blue zeros	15 seconds
Level 6	Count 30 blue zeros	25 seconds
Level 7	Count 35 blue zeros	30 seconds
Level 8	Count 40 blue zeros	35 seconds
Level 9	Count 45 blue zeros	40 seconds
Level 10	Count 50 blue zeros	40 seconds

B.12. Consent Form: Participants

University of Glasgow

College of Social Sciences

Consent Form

Title of Project: Impact of Life Skill Training

Name of Researcher: Ms. Seemanti Ghosh

Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb

I confirm that I have read and understood the Plain Language Statement/Participant Information Sheet for the above study and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

I consent / do not consent (Tick as applicable) to participate in the surveys and activities under the life skill program for the purpose of this research.

I acknowledge that my name would not appear anywhere in the research and the data collected would not have my name attached.

I understand that the data collected from this research will be stored securely with my personal details removed and agree for it to be held or shared as set out in the Plain Language Statement.

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant ……

Signature …….. Date ……

Name of Researcher …… Signature ……..

Date ……

B.13. Consent Form: Parents

University of Glasgow
College of Social Sciences

Consent Form

Title of Project: Impact of Life Skill Training

Name of Researcher: Ms. Seemanti Ghosh

Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb

I confirm that I have read and understood the Plain Language Statement/Participant Information Sheet for the above study and have had the opportunity to ask questions. I understand that my child's participation is voluntary and that my child is free to withdraw at any time, without giving any reason.

I consent / do not consent (Tick as applicable) to my child participating in the surveys and activities under the life skill program for the purpose of this research. I also consent for my child to be video-recorded during the process. (I acknowledge that copies of transcripts will be returned to participants for verification.)

I acknowledge that my child's name will not appear anywhere in the research results and also all the data collected will be anonymised.

I understand that the data collected from this research will be stored securely with my child's personal details removed and agree for it to be held or shared as set out in the Plain Language Statement.

I agree for my child to take part in this research study ☐

I do not agree for my child to take part in this research study ☐

Name of Parent/carer (if participant is under 16) ……

Signature …….. Date ……

Name of Researcher …… Signature ……

Date ……

B.14. Plain Language Statement: Children

University of Glasgow

College of Social Sciences

Participant Information Sheet – Children

Title of project and researcher details

Effectiveness of Life Skills Training
Researcher: Ms Seemanti Ghosh (Telephone - 0141 330 4940)
Degree: PhD (Economics)
Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb
Course: PhD (Economics)

You are being invited to take part in a research project along with all the other students in your class who participate in the after school life skill training. A research project is a way to learn more about something. Even if your parents have given consent for you to participate, you can choose not to do so. If, after you have started to take part, you change your mind, just let me know and I will not use any information you have given me in my writing. Also, please note that during this research you will not be required to interact with any new person.

Before you decide if you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the information on this page carefully and discuss it with others in the class and your parents/guardian if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?
The purpose of the study if to understand how the life skill training that you receive every day from the *(NGO name removed for confidentiality)* instructors after school is helping you.

Why have I been chosen?
You have been chosen to participate in this research because you participate in the after school life skill programme every day, conducted by the instructors from *(NGO name removed for confidentiality)*.

Do I have to take part?
You do not have to take part in this study, and if you decide not to, or if your parent/carer does not want you to take part, you will still be part of the class exactly the same as you are now. If, after you have started to take part, you change your mind, just let me know and I will not use any information you have given me in my writing.

What will happen to me if I take part?
If you decide to take part, the day of research will also be following your daily routine. When you will be attending the after school life skill training, your instructors will ask you to participate in two games and also ask you to answer few questions. You will be participating in the activities along with the other children from your class. You do not have to answer any questions that you don't want to or participate in the game if you do not wish to. You would not stay any longer than your usual daily training time which is 2 hours. You will not be required to reveal any information for the purpose of the research that you would not otherwise do.

Will the information that I give you in this study be kept confidential (private)?
I will keep all the information that you provide through surveys lock in a cabinet or computer that is password locked. When I have finished writing my study I will destroy all the information. Also, since the data would not contain your name, no one will be able to identify you through the data. Your responses to the surveys would be collected by your instructors. Hence they would have access to the data. Also, the replies you give will be shared with a translator from *(NGO name removed for confidentiality)* who would be translating the information from Kannada to English. However, if through the responses you provide, anything makes me worried that you might be in danger of harm, I might have to tell other people who need to know about this.

What will happen to the results of this study?
The results of the study will help everyone understand how the life skill training is helping you. It will help you understand the effectiveness of the time that you are spending after school every day. The results are expected to be published any time after September 2016. You can obtain a copy of the results from your school head teacher.

Who has reviewed the study?
This research is being funded by the University of Glasgow, UK and the project has been reviewed by the College of Social Sciences Research Ethics Committee.

Who can I contact for further Information?
If you have any concerns regarding the conduct of the research project, you can contact the College Ethics Officer by contacting Dr. Muir Houston at muir.houston@glasgow.ac.uk. If you need any further information please contact the researcher Seemanti Ghosh at s.ghosh.1@research.gla.ac.uk.

Thank you for reading this.

B.15. Plain Language Statement: Parents

University of Glasgow
College of Social Sciences

Participant Information Sheet - Parents

Title of project and researcher details

Effectiveness of Life Skills Training
Researcher: Ms Seemanti Ghosh (Telephone - 0141 330 4940)
Degree: PhD (Economics)
Supervisors: Professor Sayantan Ghosal & Professor Kenneth Gibb
Course: PhD (Economics)

Your child is being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this

The aim of the study is to measure the effectiveness of the life skill training program that your child has been attending during after school hours every day. Data for the research study would be collected when your child is attending the after school life skill training and would require participation time of approximately 2 hours on two consecutive days. Your child has been chosen to participate in this study since *(School name removed for confidentiality)* Mary's School. Every other student who is under the graduate program of *(NGO name removed for confidentiality)* in (*School name removed for confidentiality)* has been invited to participate in this research study. There is no potential risk to your child on participation since it does not require any activity that could harm your child physically or psychologically or change any part of your child's daily routine. In total 240 students from *(School name removed for confidentiality)* are expected to participate in this research study. It is up to you to decide whether or not to allow your child to take part. If you decide to allow your child to take part you are still free to withdraw at any time and without giving a reason. A decision of not to participate would not impact your child's grades anyway.

What will happen if you take part?
If you decide to allow your child to participate, then s/he will continue to attend the after school life skill training hours as usual routine. Your child's schedule would remain the same. During the after school sessions, instructors will ask your child to participate in two games as part of the session activities and your child would have to reply to a questionnaire before and after the life skill session happens. Your child would not be expected to spend any longer than the 2 hours schedule that s/he spends every day. Your will be interacting with his/her regular instructors who will run the session for everyone.
As a part of the study, even you would be required to answer a questionnaire which would include details on your occupation, education, income, family background details, etc.

Keeping information confidential (private)
All information, which is collected about your child during the course of the research, will be kept strictly confidential in a locked cabinet or in a locked file on my computer. When I have finished writing my study I will destroy all the information. Your child will be identified by an ID number and any information about your child will have his/her name and address removed so that your child cannot be recognised from it. The data will be collected from your child by the instructors who conduct their training session every day and hence the instructors would have access to the data. They would hand over the data me at the venue. Also, since the data would be collected in Kannada, the data will also be shared with a translator who would translate it back to English. Beyond that, the data would not be shared with anyone. However, if during our conversation I hear anything which makes me worried that your child might be in danger of harm, I might have to tell other people who need to know about this.

The results of this study
The results of the research study will help you understand the effectiveness of the life skill training that your child has been attending in his/her after school hours. It will help you understand the effectiveness of the time that your child has been currently spending in after school with the trainers for life skill sessions. The results are expected to be published any time after September 2016. You can obtain a copy of the results from your school head teacher.

Review of the study
This research is being funded by the University of Glasgow, UK and the project has been reviewed by the College of Social Sciences Research Ethics Committee.

Contact for further Information

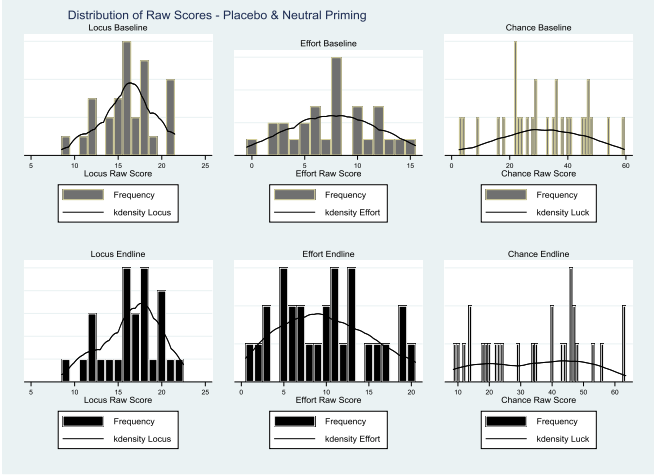
If you have any concerns regarding the conduct of the research project, you can contact the College Ethics Officer by contacting Dr. Muir Houston at muir.houston@glasgow.ac.uk. If you need any further information please contact the researcher Seemanti Ghosh at s.ghosh.1@research.gla.ac.uk.

B.16. Photographs from the Field

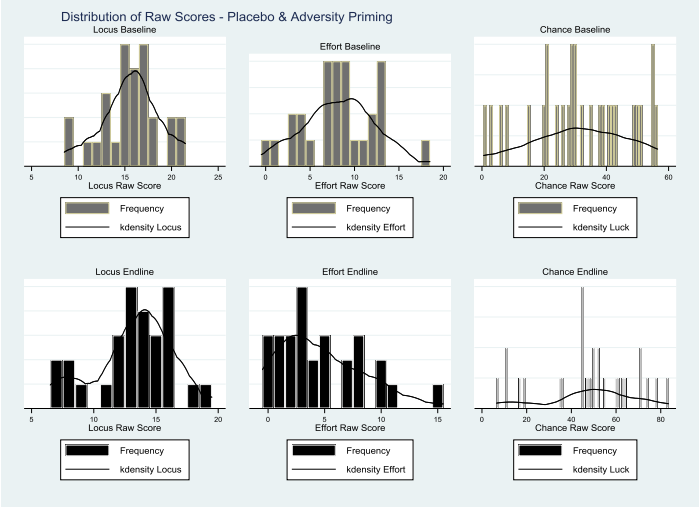
(Figures removed according to confidentiality agreement)

B.17. Distribution of LoC, Effort and Chance by Treatment Group

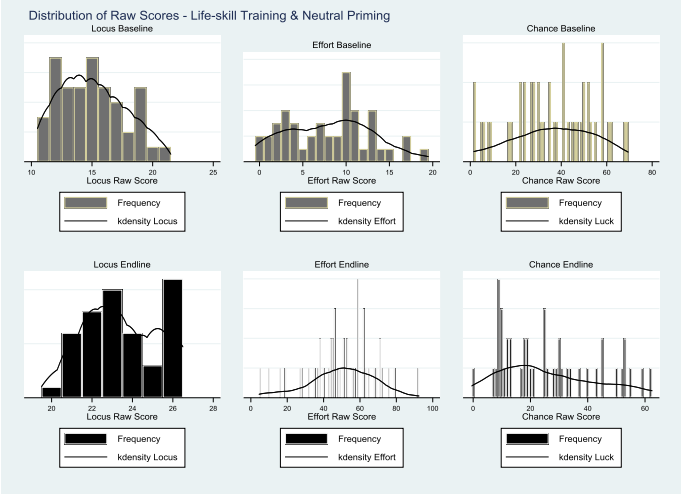
A. Group - Placebo and Neutrally Primed



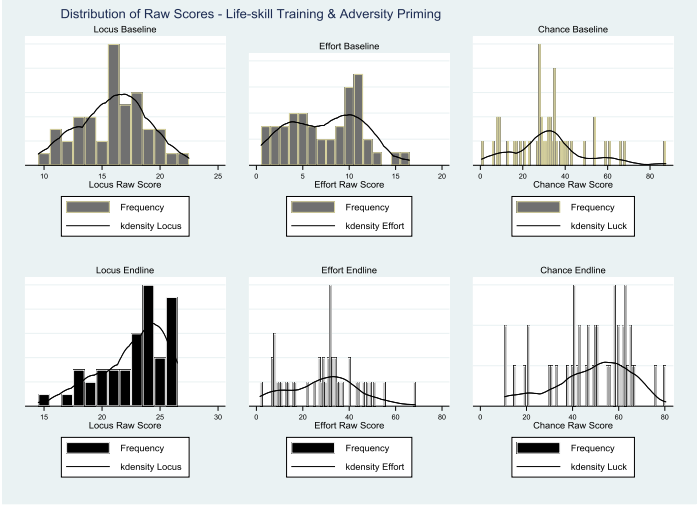
B. Group - Placebo and Adversity Primed



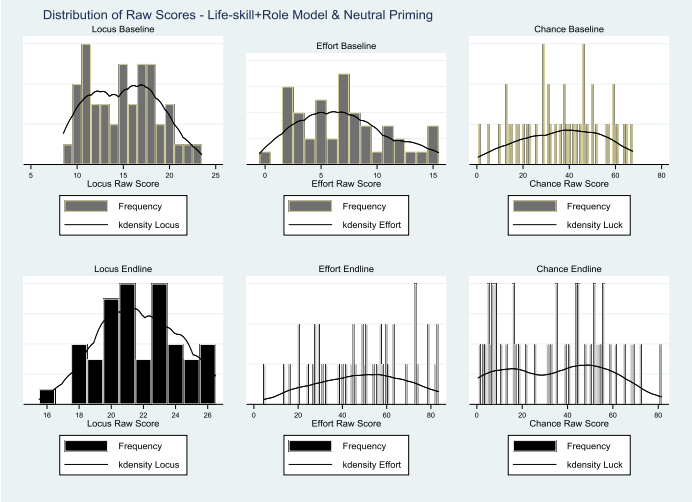
C. Group – Life-skill Training and Neutrally Primed



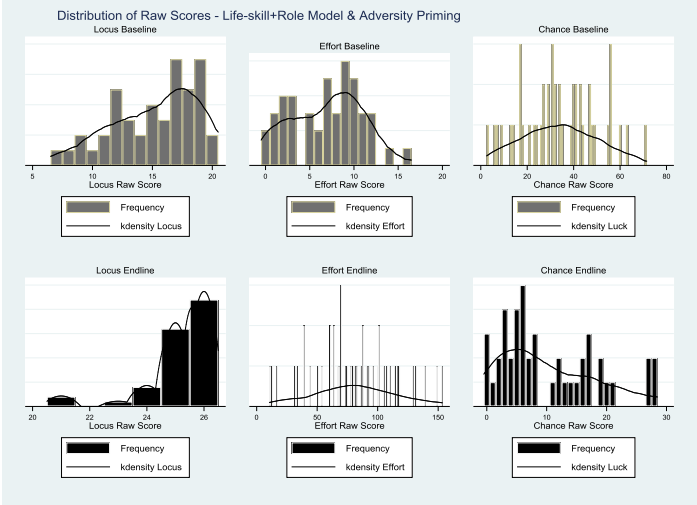
D. Group – Life-skill Training and Adversity Primed



E. Life-skill Training + Role Model and Neutrally Primed

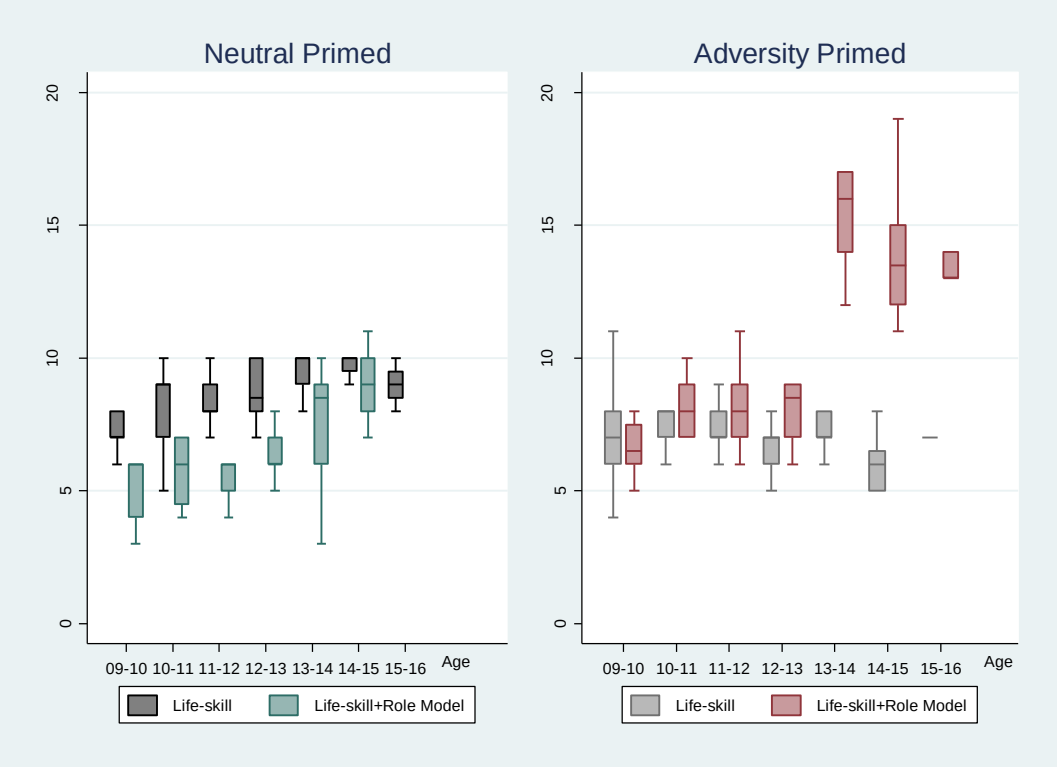


F. Life-skill Training + Role Model and Adversity Primed

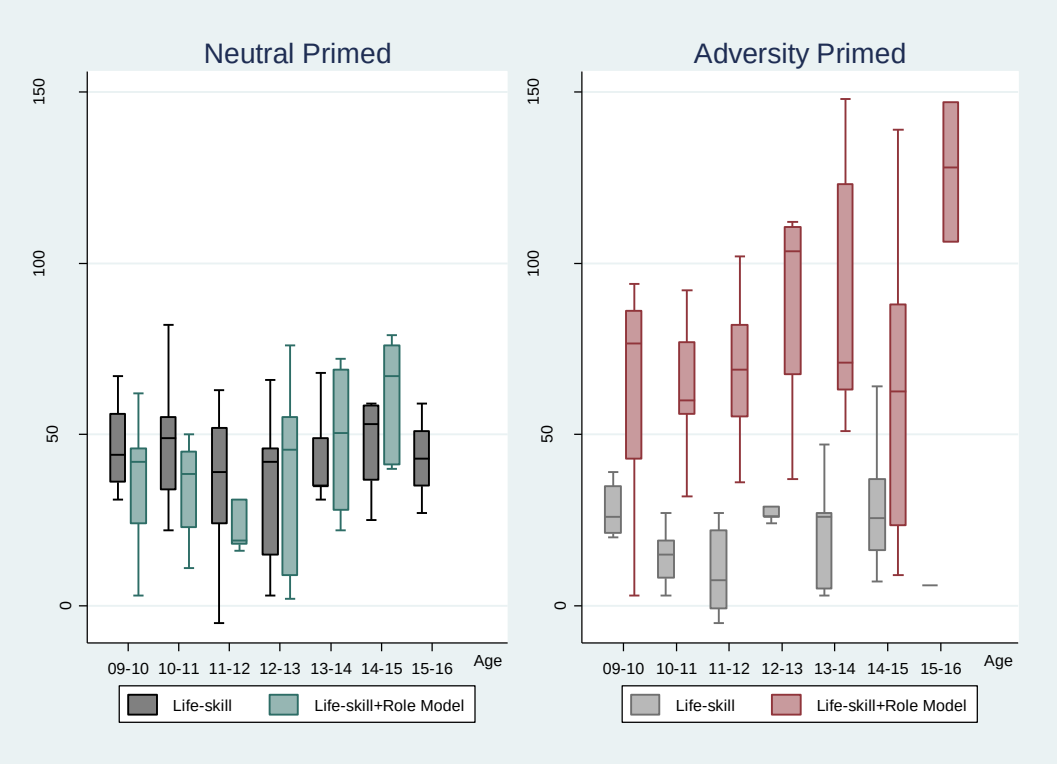


B.18. Age profile of remedial intervention effect (RTG1 & RTG2) on raw scores of LoC and Effort

A. Locus of Control



B. Effort



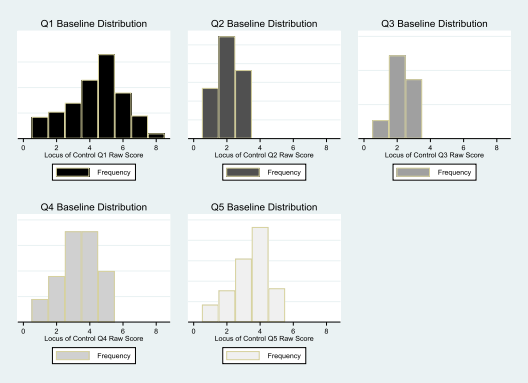
B.19. Statistical balance across treatment groups for sociodemographic characteristics

Variables	Placebo+ Neutral Priming	Lifeskill+Neutral priming	Lifeskill-RoleModel+Neutral Priming	Placebo+Adversity Priming	Lifeskill+Adversity Priming	Lifeskill-RoleModel+Adversity Priming	One-way ANNOVA F-statistic	One-way ANNOVA Prob>F
Age (Yr.)	11.75	11.95	12.00	11.90	11.95	12.05	0.21	0.96
	1.57	*1.93*	*1.72*	*1.84*	*1.92*	*1.94*		
Gender (=male)	0.43	0.53	0.56	0.46	0.53	0.47	0.74	0.60
	0.50	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*		
School Starting Age (Yr.)	4.13	3.63	4.02	4.25	3.92	4.36	4.83	0.00
	0.86	*0.73*	*0.79*	*0.95*	*0.75*	*1.83*		
Religion (=Hindu)	0.93	0.87	1.00	0.82	0.96	0.89	4.18	0.00
	0.26	*0.34*	*0.00*	*0.39*	*0.21*	*0.32*		
Mother No Primary Education (=1)	0.14	0.21	0.16	0.07	0.11	0.20	1.53	0.18
	0.35	*0.41*	*0.37*	*0.26*	*0.32*	*0.41*		
Father No Primary Education (=1)	0.18	0.21	0.25	0.15	0.16	0.32	2.00	0.08
	0.39	*0.41*	*0.44*	*0.36*	*0.36*	*0.47*		
Mother Employed (=1)	0.64	0.65	0.61	0.70	0.62	0.70	0.53	0.76
	0.48	*0.48*	*0.49*	*0.46*	*0.49*	*0.46*		
Standard of Living (=Basic)	0.86	0.84	0.89	0.82	0.82	0.87	0.44	0.82
	0.35	*0.36*	*0.32*	*0.39*	*0.38*	*0.34*		
Family Size	4.39	4.53	4.29	4.75	4.40	4.78	1.72	0.13
	0.82	*1.37*	*0.62*	*2.18*	*0.75*	*1.88*		
Tenure (=Rent)	0.86	0.84	0.91	0.79	0.89	0.76	2.28	0.05
	0.35	*0.36*	*0.29*	*0.41*	*0.32*	*0.43*		
N	56	90	90	56	90	90	471	471

Note: Standard Deviation in italics

B.20. Distribution of Raw Scores at Baseline

A. Distribution of Locus of Control Questions (Q1-Q5)



B. Distribution of trials in each level of Effort task (level 1-level 3)